PACKAGE engineering

In this issue —

Our booth-by-booth review of the Packaging Machinery Manufacturers Institute Show of 1959

Starting on Page 85

Shortcuts to higher canning line output

Having a basic plan, selecting the right equipment, developing proper can and case movements, setting up specialized lines—all contribute to efficiency and stepped-up production. (See Page 39)

Standard costs: Packaging's "acid test"

Taking a look at the setting of standards, recording of actual expenditures, comparing these with the standards, and acting on the variances—all explained in "non-accountant" language. (See Page 46)

An ideal film: Prediction or challenge?

Reviewing the work of producers in developing single films and that of converters in combining the properties of several. two experts urge still more research, offer spec's of a workhorse film. (See Page 52)

Complete table of contents on Page 2

NOVEMBER 1959

VOLUME 4 • NUMBER 11

Package Engineering
185 N. Wabash Avenue,
Chicago 1, Illinois
Form 3547 requested

BULK RA
U. S. POST
PAID
PONTIAC, IL
PERMIT NO

At the PMMI SHOW SCANDIA has something brand new*

to show you in wrapping, multiple-wrapping, bundling and cartoning.

SCANDIA

PACKAGING MACHINERY COMPANY

500 Belleville Turnpike • North Arlington, New Jersey, WYman 1-8400

* *See us in Booth 1022, New York Coliseum, November 17-20, 1959*

Aluminum Foil Packaging – Anti-Oxidant Treated Materials

Report No. 24 of a Series by Reynolds Metals Co.

The prevention of oxidation and consequent rancidity in food products is obviously important to food manufacturers. Previous reports in this series have dealt briefly with two solutions to this problem: the use of aluminum foil packaging to exclude light, which has been proved a catalytic aid to oxidation; and the reduction or elimination of oxygen in the aluminum foil package by removing the air – either maintaining the resultant vacuum or replacing the air with an inert gas such as nitrogen. This vacuum or gas packaging is clearly an ultimate solution. However, it involves costly containers and equipment, making it too expensive for many types of food products.

Anti-Oxidant Development

Another method lies in the use of anti-oxidants – chemical compounds which specifically deter the oxidation of fat- and oil-containing foods and which can be incorporated directly into some food products. In the field of packaging, they were first used as coatings on the interiors of packages, performing their preventive function in direct contact with the product. This proved satisfactory only for solid masses of foods, where the total food surface is subjected to anti-oxidant contact. For food products such as cereals, made up of loose particles separated by air spaces, there cannot be sufficient contact between the food surface and the anti-oxidant coating. At the same time, the air spaces themselves form an internal atmosphere capable of causing rancid tastes and odors – regardless of the effectiveness of the package in keeping air out.

Volatilizing or Subliming

Recently, the Reynolds Metals Company has developed methods by which anti-oxidants are incorporated into aluminum foil packaging materials, so that the chemicals slowly volatilize or sublime into the atmosphere within the package. By permeating the air spaces in the product mass, they provide overall protection. And since the aluminum foil packaging itself has extremely low water vapor and gas transmission rates, the volatilized anti-oxidants are maintained within the package for extended periods of time.

The anti-oxidant compounds used in this method are approved by the Food and Drug Administration for use with foods. They are available with Reynolds Aluminum Foil carton liners, overwraps or bags. By this means the shelf life of cereals, crackers, cookies, confections and many other dry, fat-containing foods can be extended very considerably – without changing present wrapping and packaging equipment.

Chart Explained

The chart presented herewith shows taste-panel evaluation for rancidity of saltine type crackers when packaged in several different materials. The packages of crackers were stored at accelerated conditions of 100°F. and 90% relative humidity with the exception of the control packages, which were stored at 70°F. and 50% relative humidity. The following packages were evaluated:

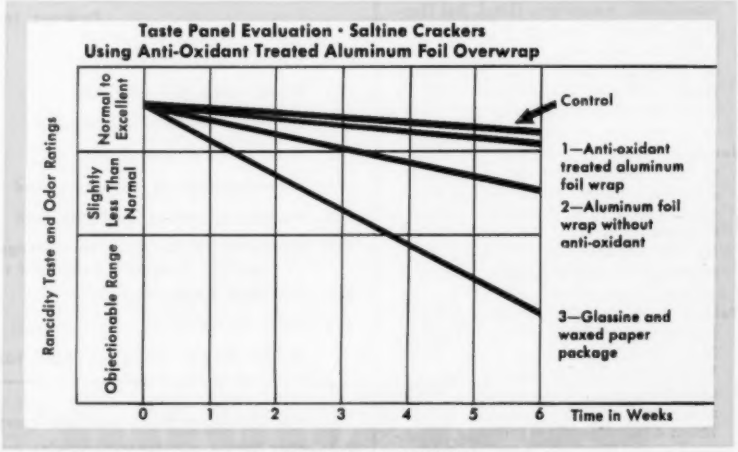
1. Reynolds anti-oxidant treated aluminum foil heat-sealing wrapper. (Four quarter-pound saltine cracker units each wrapped with *anti-oxidant treated Reyseal* in a chip-board carton.)
2. Reynolds aluminum foil heat-sealed wrapper. (Four quarter-pound saltine cracker units each wrapped with *Reyseal* in a chip-board carton.)
3. Glassine and waxed paper packaging. (Four quarter-pound saltine cracker units each sealed in a waxed glassine wrapper, in a waxed paper overwrapped carton.)

The control packages were the same as No. 3 except that they were stored at the normal conditions of 70°F. and 50% relative humidity.

Results Analyzed

Statistical analysis of the panel ratings for rancidity show that crackers in the anti-oxidant treated aluminum foil wrap achieved normal to excellent rating under the accelerated conditions of 100°F. and 90% relative humidity for the six-week period – a rating virtually the same as that of the control package stored at room conditions of 70°F and 50% relative humidity. The crackers in the aluminum foil without the anti-oxidant had a slightly less than normal rating after the six-week period at 100°F. and 90% relative humidity. The crackers in the package without aluminum foil were rated objectionable between the third and fourth week of storage at 100°F. and 90% relative humidity.

For further information on this or other phases of aluminum packaging, call your local Reynolds representative or write to **Reynolds Metals Company**, Richmond 18, Va.



See Reynolds shows—James Michener's "ADVENTURES IN PARADISE" Monday nights and "ALL STAR GOLF" every Saturday ABC-TV Network. © 1959 by Reynolds Metals Company

NOVEMBER 1959 • VOLUME 4 • NUMBER 11

PACKAGE engineering

AN ANGUS J. RAY PUBLICATION

For your calendar

November 2-4. AMA packaging seminar, "Manufacturing's part in the overall packaging program," The Hotel Astor, New York, N. Y. Contact: John L. Wood, American Management Association, 1515 Broadway, New York 36, N. Y. *Telephone: JUdson 6-8100.*

November 9-11. AMA packaging seminar, "Fundamentals of packaging specifications," The Hotel Astor, New York, N.Y. Contact: John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

November 16-18. 21st annual national packaging forum of Packaging Institute, Hotel Statler, New York, N. Y. Contact: Charles A. Feld, executive director, Packaging Institute, 342 Madison Avenue, New York 17, N. Y. *Telephone: MUrray Hill 7-8875.*

November 17-20. Packaging Machinery Manufacturers Institute Show, New York Coliseum, New York. Contact: Hanson & Shea, Inc., One Gateway Center, Pittsburgh 22, Pa. *Telephone: ATlantic 1-8552.*

January 17-20. 53rd Annual Exhibit of the Canning Machinery and Supplies Association, Americana Hotel, Bal Harbour, Florida. Contact: W. D. Lewis, Secretary-Treasurer, Canning Machinery & Supplies Association, 4630 Montgomery Avenue, Washington 14, D. C. *Telephone: OLiver 6-6979.*

January 18-20. 53rd Annual Convention of the National Canners Association, Americana Hotel, Miami Beach, Florida. Contact: R. F. Alexander, National Canners Association, 1133 20th Street, N. W., Washington 6, D. C. *Telephone: EXecutive 3-7030.*

February 8-10. 5th Military-Industry Packaging and Materials Handling Symposium, Sheraton Park Hotel, Washington, D. C. Contact: Lt. Colonel George A. Davies, Chief, Packaging Branch, Headquarters, USAF, Room 4312, Munitions Building, Washington 25, D.C. *Telephone: LIberty 5-6700, Ext. 6-2956.*

Articles

39 Five steps to better canning operations, by J. Edward Auen, plant engineer, Pennsylvania Refining Company
Stressing correct planning, equipment selection, use of specialized lines and the application of production shortcuts.

46 Packaging's ultimate test: Standard costs, by Stanley B. Henrici, head, industrial engineering department, H. J. Heinz Company
Explaining in "non-accountant" language their significance in setting standards, comparing performance to standards and acting on variances.

52 Tomorrow's films challenge today's research, by Bailey Bennett, assistant consultant, and C. W. Cooper, assistant chief, rubber and plastics division, Battelle Memorial Institute
Looking at how producers and converters approach film development—and challenging both with the spec's of a "workhorse" film.

61 Handy pull-out guide to Packaging Machinery Manufacturers Institute Show of 1959 and the 21st Annual National Packaging Forum of Packaging Institute
Contains a list of exhibitors, their hotel headquarters, addresses and phone numbers of these hotels, and the complete program of Packaging Institute's forthcoming forum.

70 Save time by making your own folding carton samples, by Edmond Creagh, packaging engineer, Ekco Products Company
Enumerating practical techniques of the sample-making process, and stressing the importance of information vital to carton development.

76 Structural redesign for damage-free packaging, less material use, by Ray Jaski, packaging engineer, kitchen appliance division, Hotpoint, Division of General Electric Company
How package development and improved operating techniques combine, leading to savings of more than $44,000 a year.

85 The Packaging Machinery Manufacturers Institute Show of 1959
A booth-by-booth report of machinery and materials which the various exhibitors will have on display at the New York Coliseum, November 17-20.

Package Engineering is indexed in Engineering Index

Departments

4 A note from the publisher

6 Letters to Package Engineering

8 The PULSE / of packaging

97 Announcements of machinery and products

106 Industry literature available free

120 Structural design notes for corrugated containers:
Note No. 10: Buckling patterns of tubes

122 Classified advertising

124 What we think (our editorial page)

Reader Service Cards on Pages 107, 108

Our December, 1959 issue will carry a cumulative editorial index for the year listing our feature articles by subject, author, and other headings.

Quality Control PACKAGING

How to
PROTECT
your paper profits

Kimberly Clark's new line of Marvalon drawer and shelf lining and decorative coverings gets dazzling display in VITAFILM. *Marvalon Package by Milprint, Inc.*

Here's a powerful new asset that can be added to the merchandising of paper products. It's VITAFILM — Goodyear's unique, tough, crystal-clear package wrap.

VITAFILM is lustrous — gives an added sparkle to whatever it encloses. Colors and patterns — in shelf paper, greeting cards, stationery, plates, cups and the like — are highlighted.

And this eye-appealing fresh look *lasts* — no matter how long the goods are on display. VITAFILM is no magnet for dust!

VITAFILM has, in addition to beautiful clarity, the ability actually to transmit the "feel" and texture of the product.

But that's only half the job VITAFILM can do for you. The *protection* it affords is unequaled.

Under the roughest handling by shoppers, VITAFILM will not split or run. Its seals, made under a wide temperature range, are heat-welded to be completely strip-proof, are even stronger than the film itself. That's the end of broken-package troubles, spilled contents, unsalable goods!

Because VITAFILM seals quickly and permanently over a wide range of temperatures, it operates smoothly and efficiently on automatic machinery.

If your interest is paper products — or textiles, hardware, pharmaceuticals, foods — you'd best get the VITAFILM story *now* from the Goodyear Packaging Engineer. No obligation, of course. Just write: Goodyear, Packaging Films Dept. K-6432, Akron 16, Ohio.

Vitafilm by GOODYEAR

The best thing between you and your customer

Vitafilm, a Polyvinyl chloride—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

A note from the Publisher

Check your package first

The chief executive officer of a large distillery recently called in one of his glass suppliers. He had an unusually shaped gift decanter, and he wanted to know how he could run it on a production line. When it was suggested that he change the shape, he said he knew the package would sell just as it was, and that all he wanted to know was how to run it through bottling and labeling equipment.

Unfortunately not everyone concerned with the marketing aspect of packaging is so astute. All too frequently the product is in production or on the market before the bugs are spotted.

Recently I heard of syrup being packaged in a new glass container with considerably thinner walls than the old container. Tremendous breakage occurred in shipping. Not only was there a lot of broken glass and total loss of the product, but considerable time and expense was involved in cleaning up those containers that were not broken.

A number of years ago, against the advice of the package research and development department, another company adopted a cheaper package without adequate testing. It resulted in around a quarter of a million dollars' worth of merchandise being called off the market and destroyed.

These are just two examples of something that happens all the time—new packages being adopted without adequate testing. All the experts are predicting a flood of new products that will be brought out in the sixties, and nearly all of them will be packaged.

Each of these new products will present a packaging problem, and I think we will have a lot of new problems. The buyer of packaged merchandise is confronted by more and more products, all beautifully packaged. He becomes immune to the appeals that formerly stopped him. Four-color printing is as beautiful and attractive as it has always been, but since it is so frequently used, it no longer has the impact on the buyer it formerly had.

It is highly probable, therefore, that more of the packages that are brought out in the future will strive to catch the buyer's eye through unique shapes, more convenience factors, unusual colors, etc., all of which require testing before adopting.

Every change of any kind in a package may affect its performance characteristics.

My point is that no matter how small a change is made in a package, it is essential that it be thoroughly checked before putting it into production. It is essential that production check it for handling on *your* machinery, or that you know where you can buy machinery that will handle it. It is also essential that research and development—either your staff or your supplier's—check the package for other vital performance characteristics.

It is very inexpensive to check first, and it is very expensive to find something wrong after the product is in production, or on the market.

Angus J. Ray

Publisher

PACKAGE engineering®

AN ANGUS J. RAY PUBLICATION

Angus J. Ray
Publisher

R. Bruce Holmgren
Editor

Harry E. Vick, Jr.
Managing Editor

Judy Van Dam
Assistant Editor

Laurence V. Burton
Contributing Editor

Anne Bernhard
Business Manager and Circulation Director

Burton Cherry
Art Director

Executive and editorial offices:

185 North Wabash Avenue
Chicago 1, Illinois
Telephone: FInancial 6-1440

Advertising sales offices:

Irwin F. Megargee
National Bank Building
Ocean City, New Jersey
Telephone: EXport 9-3519

Arnold Gieseler
299 Madison Avenue
New York 17, New York
Telephone: YUkon 6-8575

Ronald F. Inglehart
185 North Wabash Avenue
Chicago 1, Illinois
Telephone: FInancial 6-1440

West Coast representatives:

The Robert W. Walker Company

730 South Western Avenue
Los Angeles 5, California
Telephone: DUnkirk 7-4388

57 Post Street
San Francisco 4, California
Telephone: SUtter 1-5588

Package Engineering is published monthly by Angus J. Ray Publishing Co., 185 North Wabash Avenue, Chicago 1, Illinois. Angus J. Ray, president; R. B. Holmgren and I. F. Megargee, vice presidents; James G. Culbertson, secretary, and Ethyl K. Ray, treasurer. Please address articles for publication and correspondence regarding the editorial content to the editor. Statements and opinions expressed in articles and editorials are those of the respective authors, for which Package Engineering assumes no responsibility.

Copyright 1959 by Angus J. Ray Publishing Co. The name Package Engineering is registered in the U. S. Patent Office.

Package Engineering is circulated without charge to engineering, research, development, production and purchasing personnel concerned with packaging in all companies packaging their products for marketing or shipment. Thus qualified recipients are engineering and technical personnel concerned with package research and development, packaging production and packaging purchasing, within the United States; to all others, the subscription rate is $10.00 a year.

Member of Business Publications Audit of Circulation, Inc.

BPA

WE'RE "UP TO OUR NECKS" IN BAG ADHESIVE TECHNOLOGY

Bags—paper, foil, film and their combination—continue to grow in popularity as packaging containers. Their almost unlimited variation in sizes and materials of construction plus built-in properties of strength and product protection is increasing their scope of application.

Pioneering new bag applications demands solutions to new problems of grease or oil penetration, water resistance, aroma and odor barriers, heat and cold stability, flexibility, etc., as well as problems of functional design. As a leading supplier of bag adhesives, Morningstar-Paisley faces these problems cooperatively *with* the bag manufacturer. Seams and bottoms must be firmly secured and supplement the protective properties of the bag materials.

To meet these exacting specifications, M-P draws upon the experience of the staffs of nine laboratories—all experts in compounding starches, water soluble gums, latex and synthetic resins, plastisols, casein, animal glue, dextrines and countless other adhesive raw materials and chemical additives.

Manufacturers packing in bags also receive this Morningstar-Paisley service for their final closure adhesives. Specialty high speed polyvinyl acetate resin adhesives suitable for bag closing machines are keeping pace with the continuing development of new bag materials.

M-P Technical Service Men know both bag production and bag sealing and packaging machinery. To take advantage of this free "extra" service, discuss your bag adhesive problems with the M-P "shirt-sleeve" salesman serving you.

MORNINGSTAR-PAISLEY, INC., 630 W. 51st St., New York 19, N.Y. and 1770 Canalport Avenue, Chicago 6, Illinois.

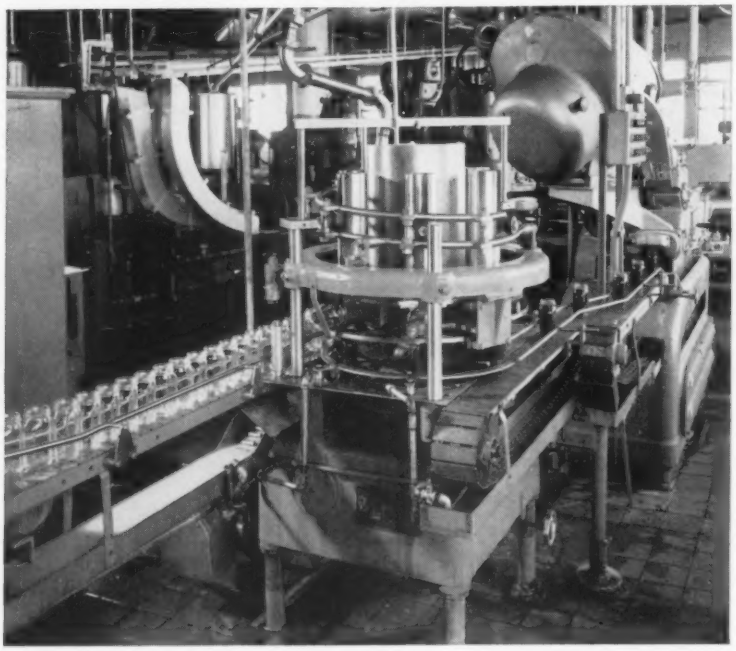
Packaging Institute's
21st Annual
National Packaging Forum
Nov. 16, 17, 18, 1959
Statler Hotel
New York, N.Y.

MORNINGSTAR-PAISLEY INC.
Continuous Research in Adhesives, Starches, Gums, Resins, Plastisols, to Provide Top Technical Service to All Industry

Offices in 28 principal cities from coast-to-coast. In Canada: Morningstar-Paisley of Canada, Ltd., Toronto

FLUIDICS

is a new PFAUDLER PERMUTIT program that provides a modern, imaginative approach for handling and processing more profitably the liquids and gases involved in: blending, evaporation, distillation, drying, filling, heat transfer, storing, centrifuging, agitation, water and waste treatment, corrosioneering, and metering.



FLUIDICS AT WORK

How to fill even viscous hot fudge with speed and accuracy

If you have problems filling viscous products accurately without losing speed, consider the experience of the Robert A. Johnston Company with their six-station Pfaudler rotary piston filler.

Mr. A. O. Meyer, Plant Manager, says, "The Pfaudler filler has been giving us some very good results. We fill approximately 55 six- or eight-ounce jars per minute with heavy hot fudge without a spill. And we also package caramel, butterscotch and chocolate syrup.

"The filler takes only about a half hour to clean thoroughly. We've had very little maintenance with it. In fact, all it really needs is a routine cleaning and lubrication."

The RP-6 filler is the smallest in the Pfaudler line . . . an ideal model for filling small lots of a number of products. Change-over for various container heights takes only about 12 minutes. Other models of the rotary piston filler will handle up to 1050 cans a minute. All these fillers are rated to ±0.1 fluid ounce accuracy.

If you'd like the full story on the complete line, write to our Pfaudler Division, Dept. PE-119, Rochester 3, N. Y.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS . . . the science of fluid processes

Letters to PACKAGE engineering

Re: "What a machinery adjuster should know—and do"

Gentlemen:

I have just finished reading my September issue of PACKAGE ENGINEERING. It has again covered a chosen group of problems showing a particularly good taste in selection as well as method of presentation.

Being in the field of designing and supervising installation of complete packaging lines, the article by Michael Dizonno, "What a machinery adjuster should know—and do," was a welcome facing up to a little-thought-of problem. Certainly Mr. Dizonno speaks from experience and with good authority. I feel that this article could be put to use, particularly on installations of completely integrated lines totally new to all plant personnel.

C. J. Reiser
Engineer Packaging Systems
Packaging Corporation of America
Rittman, Ohio

Gentlemen:

Your article in the September issue, "What a machinery adjuster should know—and do," was read with much interest. If possible, I would like 15 copies of this article. If any charge is levied, please invoice us at our address.

R. L. Doyle
Mechanical Department
Colgate-Palmolive Company
Kansas City, Missouri

Copies have been sent to you and our other readers asking for this and any other articles. For a free copy of any article (while our supply lasts) write on your letterhead to:

Reader Service Department
PACKAGE ENGINEERING
185 North Wabash Avenue
Chicago 1, Illinois (*End*)

Where will your product be in 1961?

TOP SHELF... BACK ROOM... OUT?

Nobody gets shelf space for nothing in today's competitive supermarkets. Your product has to *earn* that space, with SALES.

How can you brighten up your product to attract pick-up buying . . . protect your product so that its consistent high quality wins repeat sales . . . give your product the newest convenience features that customers look for nowadays?

The answer to your future sales-success could be right in this label . . .

BETTER PACKAGING
ALCOA. WRAP
ALUMINUM COMPANY OF AMERICA

Exactly what does this label mean?

It means—ALCOA, with the greatest fund of aluminum knowledge in the world . . . ALCOA, with the only full-scale packaging laboratory in the country, where we can test ideas, check costs, answer all problems from design to package performance . . . ALCOA, teamed with their converter specialists, to provide so much more than any single company can—top facilities, top service, top know-how, all along the line.

Does your packaging need improving?

Whatever your plans or problems, we're all set to tackle them. Call your ALCOA salesman, or write: ALUMINUM COMPANY OF AMERICA, 1657-L Alcoa Building, Pittsburgh 19, Pennsylvania.

For more information circle No. 206 on Reader Service Card, Page 107

The PULSE of Packaging

Trends to watch:

Great strides toward fuller automation, increased use of films for "make-and-fill" machines, wider use of polyethylene, more plastic food containers—these are major trends which this month's PMMI exhibitors see. They also anticipate higher speeds and predict the industry's "most outstanding" development to be improved precision design of packaging machinery.

American Can Co. announces its "first commercially successful" spiral string-pull opening refrigerated biscuit container, noting that a major problem in a package of this sort is providing a tension pull of the string between 2 and 4 lb. . . . Carry-home packages grow larger: We hear that 9x12 rugs are now being prepackaged . . . A new manufacturing method turns up a paper with higher than normal "wet strength" for wrapping food and other products. **Commonwealth Engineering Co.** says its research originated and developed the method (Patent No. 2,786,786), calculated to provide flexibility and softness, as well as moisture resistance.

General Electric Co. held its biennial company-wide packaging seminar recently, called it the most comprehensive program ever, had 55 experts (mostly GE men) speak. They foresee more use of corrugated through improvement of its functional properties, expandable polystyrene for blocking and skidding some "heavy" products, more use of scientific principles to develop realistic requirements that will replace the "unreasonable assumptions with which we have sometimes been saddled."

Notes from the government:

Mason Turner, American Can Co., New York, is now assistant director, containers and packaging division, **Business and Defense Services Administration,** U. S. Department of Commerce, Washington, D. C. With American Can 25 years, Mr. Turner has been loaned for six months to BDSA. . . . To clarify the "why" and "how" of military packaging requirements, the Navy is putting two of its packaging experts on the road to hold half-day sessions in more than 30 cities during the next 12 months. Vice Admiral E. W. Clexton, Chief of Naval Materiel, says firms hoping to do business with the government, as well as those actually holding government contracts, can participate in these seminars.

Packaging across the seas:

At the International Packaging Exposition in London, moplen polypropylene, made by **Montecatini Co.** of Milan, Italy, won the "Eurostar" packaging award as the most outstanding new material for packaging purposes. The material is an isotactic stereospecific polymerization product based on the discoveries of Prof. Giulio Natta of Milan's Polytechnic Institute.

Holland-Liftvan, The Hague, Netherlands, has introduced a line of sectional containers specially designed for international trade. The capacity of the containers can be increased even after loading has begun . . . **The Dow Chemical Co.** reports that its foreign operations account for about 10 per cent of Dow's total sales and are "expanding rapidly." "In general," Dow says its foreign plants "operated at a higher percentage of capacity during the year than similar domestic plants." Western Europe is its major outlet for exports, followed by the Far East and Central and South America.

S & S Corrugated Paper Machinery Co., Inc. has contracted with **Fabbrica Macchine Industriali,** Naples, Italy, for the manufacture of major container-making and die-cutting equipment . . . **Metalgrafica Canco, S.A.,** a can-making affiliate of **American Can International, Inc.,** in Sao Paulo, Brazil, has named Dr. Gaston G. Kohn to organize and head a technical service, research and quality control section.

Groups in the news:

Packaging Institute has launched an industry-wide "regulatory problems committee" and is now seeking members and participation. Roger V. Wilson, director of customer research, metal division, Continental Can Co., Inc., will chairman the new committee . . . **National Institute of Packaging, Handling and Logistic Engineers** has announced the establishment of two achievement awards to be presented annually to individuals who have made "outstanding contributions in the development, promotion and application of improved packaging and improved materials handling and logistics for the government." First award will be given at the May 1960 meeting of NIPHLE.

Henry Schniewind, vice president, Springs Mills, Inc., has been elected vice president of **American Management Association's** packaging division, and five new members have been appointed to the planning council of AMA's packaging division. They are: Harold J. Anderson, packaging research engineer, headquarters manufacturing planning, Westinghouse Electric Corp.; J. J. Culberg, vice president, Ekco Products Co.; Baker E. Huber, director of packaging, Corn Products Co.; W. P. Lillard, vice president, packaging and special products, General Foods Corp., and H. G. Walter, executive director, Michigan State University Packaging Foundation, Inc.

Packaging dollars and cents:

W. R. Grace & Co. reported net income amounting to $7,247,000 for the first half of 1959, compared to $4,219,000 for the same 1958 period. Sales and operating revenues were $236,675,000 for first six months of 1959, compared with $220,248,000 for 1958's first half. The 78 per cent increase in profit was attributed to increased chemical earnings and to improved business activity and stabilization of foreign exchange rates in Latin American countries where Grace operates.

For the nine months starting October 1, 1958, **Knox Glass, Inc.** reports net sales of $29,653,351 and income of $867,503. For the same 1958 period, sales were $26,571,250 and income, $682,470. Credit for the 27 per cent increase in earnings was given to the company's new Danielson, Conn. plant which began production one year ago.

More expansion for packaging:

St. Regis Paper Co. has opened Ohio Valley headquarters for its flexible packaging products sales division in Columbus. St. Regis will operate Chemical Packaging Corp. (recently acquired through an exchange of stock) as a subsidiary specializing in the sale of multiwall bags and packaging equipment to the fertilizer industry east of the Mississippi.

Philip Morris Research Center—a multi-million dollar laboratory just opened in Richmond—will conduct experiments on packaging films for **Milprint, Inc.,** a subisidiary of **Philip Morris** . . . A $3,500,000-glass container manufacturing plant is being constructed for **Thatch-**

Waldorf KNOWS *Packaging*

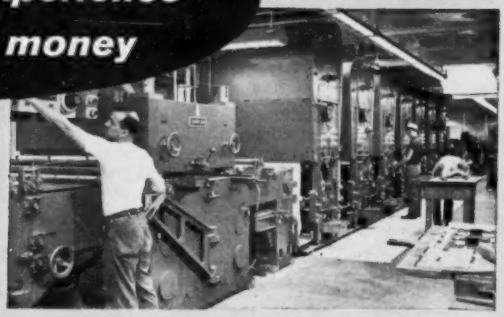
from forest to finished products

1 **With Waldorf, better packaging starts in the forests of Montana and Northern Minnesota. Waldorf cartons and containers are made from pulp that comes from trees that thrive in the snow.**

2 **Peeled logs arrive at the Waldorf plant to begin their conversion into cartons and containers. Over 35 carloads of pulp and pulp wood a day are used.**

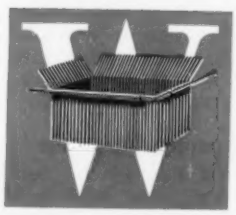
Waldorf packaging experience saves you money

3 **Four paperboard machines, two Fourdrinier and two cylinder, are producing hundreds of tons of container and carton board daily.**



4 **In the converting plant, skilled men and machines make packages that protect, ship, store, display and sell America's products.**

Waldorf is one of the nation's largest single-plant operations manufacturing packaging.



Waldorf helps plan and makes packages of all kinds for many of America's best known brands. When you work with Waldorf, no other packaging service is required. Let us prove to you how we can save you time and money. Call or write us.

WALDORF PAPER PRODUCTS COMPANY ST. PAUL 14, MINN.

For more information circle No. 207 on Reader Service Card, Page 107

It can't be just "adequate"...

PACKAGE MARKING

either makes money or wastes it

Readable, attractive marking made by Markem machines on your boxes or labels helps them from the moment they're marked to the time they're used — and can even help future sales as well. Good marking speeds handling . . . reduces waste and packing errors . . . allows quick selection by customers . . . simplifies and encourages reordering . . . carries the "quality" message of modern package design.

In contrast — *hard-to-read, uneven, "home-made" marking is a hindrance to your package or product from beginning to end* — and can actually waste thousands of dollars a year.

And a Markem marking method makes important "in-plant" savings as well. The right Markem machine, type and specialty ink working in your plant marks the *right* quantities at the right time — with savings in inventory, labor and delivery time . . . eliminates waste from obsolescence . . . handles "short runs" rapidly and economically . . . provides flexibility that allows *one machine to do a variety of marking jobs.*

Call your local Markem man or write directly, enclosing samples and requirements. Markem Machine Co., Keene 35, N. H.

MARKEM

everything industry needs . . . for profitable marking . . . since 1911

er Glass Manufacturing Co., Inc. in Tampa . . . **Federal Paper Board Co., Inc.** has purchased Sweeney Lithograph Co., Inc. of Belleville, N. J.

Olin Mathieson Chemical Corp. has announced a two-year, $12,000,000-expansion program for its packaging division. Expansion will be concentrated at the division's headquarters, West Monroe, La., and will include a semichemical pulping system, wood-handling system and bark-burning boiler . . . A pilot plant will be added to its plastics division research laboratory by **The Consolidated Paper Co.**, Monroe, Mich.

Phillips Chemical Co. will expand ethylene capacity at its Sweeny, Tex. plant by 35,000,000 lb. a year . . . **Ivers-Lee Co. (Canada) Ltd.** has opened a new plant in Brampton, Ont. . . . Installation of new production equipment for manufacturing polyethylene film has been announced by **Fabricon Products**, division of **Eagle-Picher Co.**

A department of sales coordination to service its customers in the packaging field has been created by **Crompton & Knowles Packaging Corp.** . . . **The Dow Chemical Co.** will build facilities for producing polypropylene at Torrance, Calif. At Midland, Mich. Dow plans to form a new laboratory group, the long range plastics application laboratory . . . Plans for a plant to manufacture multiwall, burlap, cotton, open-mesh and waterproof laminated-textile bags in the San Francisco Bay area have been announced by **Bemis Bro. Bag Co.**

Celanese Chemical Co. has started commercial production of 2-ethylhexyl acrylate at its recently expanded Pampa, Tex. plant . . . Construction will start immediately on a new plant for **The Arabol Manufacturing Co.** in Marietta, Ga. . . . **Packaging Services Inc.**, a new contract packaging company, has opened offices and a plant in Wilmington, Del. . . . An 80,000-sq. ft. expansion will connect **Owens-Illinois Glass Co.**'s paper mill and multiwall bag plant in Valdosta, Ga. The expansion will be used for storage of roll paper stock of the mill and bag plant.

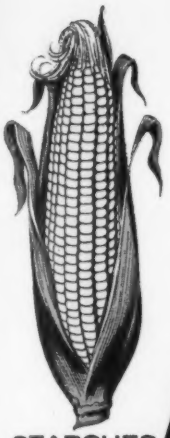
As part of its program to triple production of extrusion-coated packaging films, **Print-A-Tube Co.** has acquired a 15,000-sq. ft. plant in Paterson, N. J. . . . **U B S Chemical Co.**, division of **A. E. Staley Manufacturing Co.**, has contracted **Badger Manufacturing Co.** to expand its facilities for Ubatol polymer emulsions at UBS's Lemont, Ill. plant . . . **E. G. Staude Manufacturing Co.** has become a subsidiary of the **Ex-Cell-O Corp.**, Detroit, Mich., and will move its manufacturing facilities to Ex-Cell-O's Bluffton, O. plant.

What people are doing:

Edward P. Finch has been named manager of General Foods Corp.'s carton

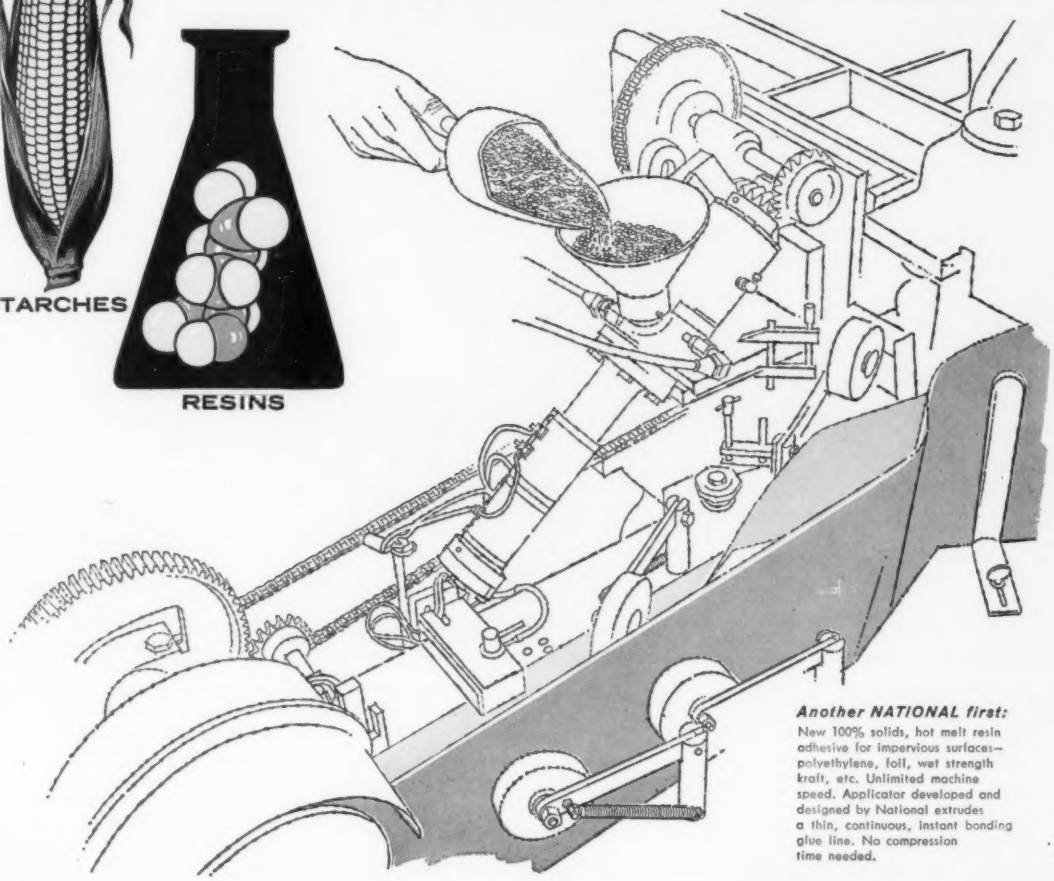
"Cross Pollination"

GENETICS + SYNTHETICS + ADVANCED THINKING



STARCHES

RESINS



Another NATIONAL first:
New 100% solids, hot melt resin adhesive for impervious surfaces—polyethylene, foil, wet strength kraft, etc. Unlimited machine speed. Applicator developed and designed by National extrudes a thin, continuous, instant bonding glue line. No compression time needed.

Creates basic advances in Package Making

The genetic "cross pollination" of hybrid corn to produce unique strains . . . and the chemical "cross pollination" of corn starch to produce unique starch derivatives . . . plus "cross pollination" with vinyl acetate polymers and copolymers in emulsion form . . . have given NATIONAL complete flexibility of formulation in creating new and unique starch and resin adhesives for packaging.

That's one great advantage.

An even greater customer advantage is NATIONAL's unmatched technical service. It's based on the "cross pollination" of our advanced thinking in adhesive research and our broad technical field experience.

This unique "cross pollination" of genetics, synthetics and advanced thinking has resulted in a wealth of know-how, not generally possessed by individual packaging companies.

NATIONAL's "cross pollinated" technical service is available for the asking . . . to help build product features that become decided competitive advantages for you.

You'll find our packaging adhesives—everywhere!

See us at PMMI & PI New York City, Nov. 16-20

National STARCH and CHEMICAL CORPORATION
750 THIRD AVENUE, NEW YORK 17, N. Y.

SYNTRON Vertical Vibratory PARTS FEEDERS

Speed parts handling— Cut packaging costs

—by automatically orienting and feeding components in single line to assembly, counting, packaging and other operations at instantly controlled rates. Their efficient high speed vibration permits the handling of even delicate parts.

SYNTRON Parts Feeders are easily adapted to tie in with automatic operations, as shown above. They can be fitted with gravity feed chutes with integral escapement mechanism, limit switches and/or counting devices.

SYNTRON Parts Feeders are accurate and dependable—there are no mechanical wearing parts therefore, downtime and maintenance costs are low. To cut production costs and have accurate dependable, rate controlled, automatic feeding of small parts call SYNTRON

Write for free Catalog data

SYNTRON COMPANY
269 Lexington Avenue Homer City, Penna.

Other SYNTRON Equipment of proven dependable Quality

and container division plant being constructed at Saratoga Springs, N. Y. Formerly, Mr. Finch was general sales manager of the carton and container plant in Battle Creek, Mich. . . . **L. J. Markwardt** retires September 30 from Forest Products Laboratory to become a consultant for several industrial concerns in the forest products fields.

John R. Bittner has been named product manager, frozen foods, for Pet Milk Co., succeeding **Wilson A. Hall** who has resigned . . . Riegel Paper Corp. has appointed **Norval W. Postweiler** as manager of packaging materials sales . . . **Donald H. Brewer,** formerly senior vice president of Container Corp. of America, has been elected vice president of Rexall Drug & Chemical Co.

Reynolds Metals Co. has named **Merrill A. Grogel** to head its new baking industry packaging group . . . **William H. Ragborg** will manage Dow Corning Corp.'s technical service and development laboratory to be built in Greensboro, N. C. . . . New vice president in charge of West Coast operations for National Packaging Corp. is **Frank H. Kimball.**

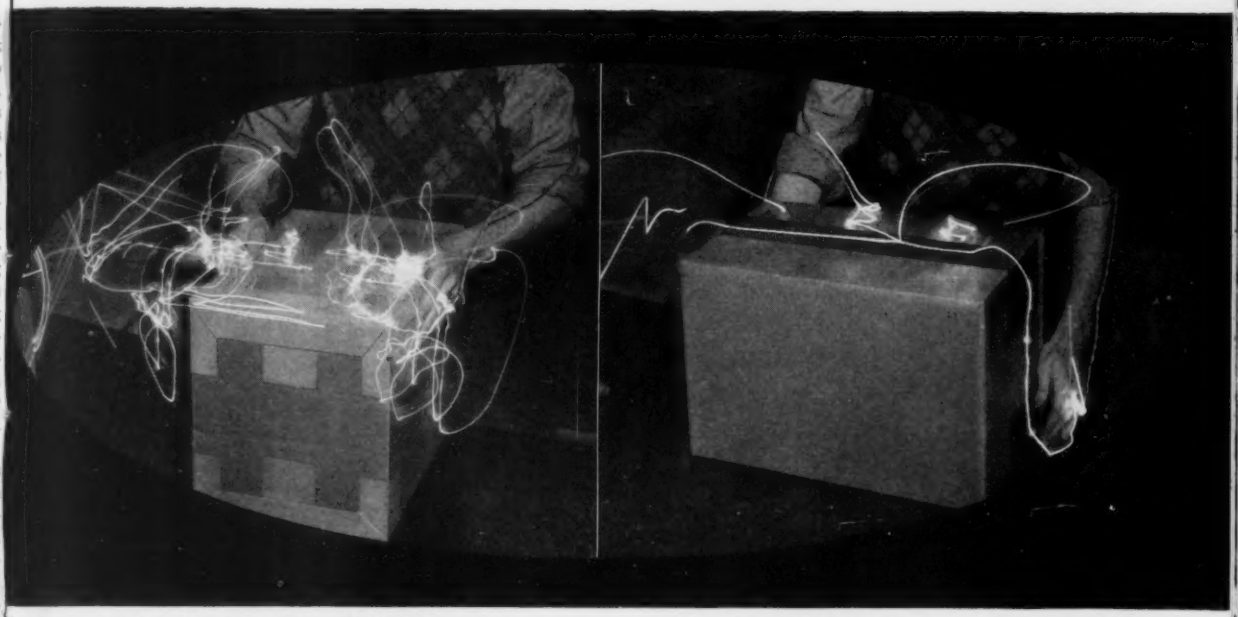
American Can Co.'s Canco Div. has appointed **V. J. Verhunce** as Eastern area manager of manufacture. American's Marathon Div. has appointed **Jerome (Stretch) Hart** as dairy and general packaging sales representative . . . **L. E. Wright** is now administrative assistant to the general sales manager of St. Regis Paper Co.'s kraft division. New appointments in St. Regis' technical activity reorganization are — **Dr. Robert W. Reed,** director of technical services and control and **Thomas A. Hewson,** director of technical planning.

At Olin Mathieson Chemical Corp.'s packaging division, **Wade M. Williams** has been appointed carton sales representative. New appointments for Olin films are: **Andreas Duus, Jr.,** salesman; **Gerald A. Martin,** San Francisco sales service representative; **Edward F. Begin,** office manager . . . Assistant to the sales manager of E. W. Bliss Co.'s container machinery division is **Donald J. Lundstrom.**

Derby Sealers, Inc. will be represented on the West Coast by **Bruce Holman** . . . **Charles W. Grafslund** has joined Woodland Container Co. as packaging design engineer and special sales representative . . . At U. S. Industrial Chemicals Co., **Ralph M. Knight** has been appointed a vice president and **Walter J. Kilmer,** manager of Detroit sales division . . . **William P. Imhoff** has joined Peters Machinery Co. as sales engineer . . . Two sales staff changes at Milprint, Inc. are: **Blaine Baesler** assumes new position of national field sales manager and **Ray Schmitz** replaces Mr. Baesler as San Francisco district manager.

(Turn page)

The Ludlow Method with SNAKETAPE® and GLASPUN® seals 3 TIMES FASTER... 278% STRONGER



OLD WAY (120 Seconds) White lines show actual motions required for sealing *just the top* of a container with plain paper tape.

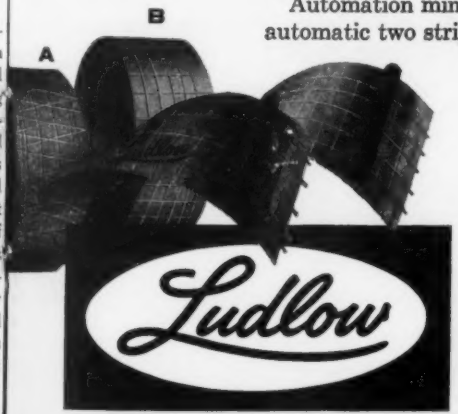
LUDLOW METHOD (40 Seconds) The same job is done in a single motion. And tough multi-directional fibre reinforcements make closures nearly 3 times as strong.

The tapes that broke the six-strip habit!

Ludlow's reinforced tapes, SNAKETAPE and GLASPUN, are so strong that only two strips are required to seal your cartons instead of the six strips required when plain paper tapes are used. This faster, stronger center seam closure method actually reduces your tape application costs by 66%. Both SNAKETAPE and GLASPUN are approved for shipment on all carriers, including railroads under U.F.C. Rule 41.

Be sure to specify *Ludlow* reinforced tapes — either glass-reinforced GLASPUN, or world-famous SNAKETAPE, the *only* reinforced tape with rayon reinforcement. The Ludlow name is your best assurance of uniform quality and dependability.

Automation minded? Write for information on the Ludlow method of completely automatic two strip sealing.



Both SNAKETAPE (A) and GLASPUN (B) are available with either asphalt or non-staining laminants.

For more information on how the Ludlow method can save you time and money in your shipping room, see your Ludlow distributor or write to LUDLOW PAPERS, Inc., Needham Heights 94, Massachusetts.

For more information circle No. 211 on Reader Service Card, Page 107

VPI-Coated Papers • Greaseproof Papers • Waterproof Papers • Poly-Coated Papers • Gummed Tapes • Federal Spec. Papers • Label & Specialty Papers • Plastics

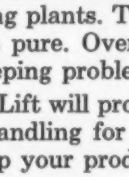
Robo-Lift's "tender touch" works for General Mills

Robo-Lift provides its gentle action to operators of General Mills. This bucket elevating conveyor can be depended on not to crumble cereals, not to make cake mixes lumpy.

Some of the 20 Robo-Lifts at General Mills' Toledo Plant feed raw materials into processing machines. Others carry finished products to packaging operations. Robo-Lift's versatile "up-and-over" operation is especially welcome in this one-floor plant where second-story top-loading is impossible.

Stainless steel buckets make Robo-Lift ideal for all food processing plants. They are easy to keep clean, help keep products pure. Overlapping edges prevent spilling—ease housekeeping problems.

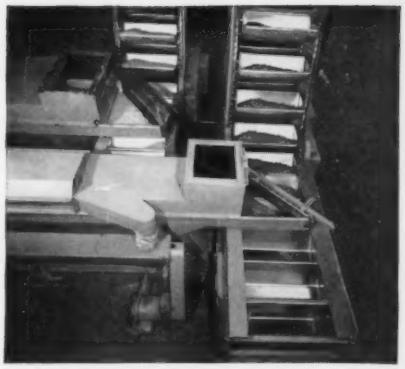
Robo-Lift will provide gentle, sanitary, economical materials handling for your plant. Its "tender touch" will help keep your product quality high. Write for complete details.



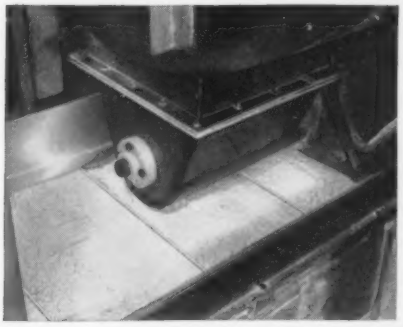
Send for the six page folder
that tells the complete story
of Lynch at General Mills.

LYNCH CORPORATION
Anderson, Indiana
Manufacturing Engineers of
automatic processing equipment
for the glass, packaging, plastic
and other industries

Atlanta • Chicago • Wallington, N.J. • Kansas City, Kansas • San Francisco



Filling Robo-Lift with dry cereal from drying trays and vibratory feeders. Robo-Lift carries cereal to sugar-coating process or to package-filling point.



Robo-Lift carries General Mills cake mixes from the mixing operation to the packaging point. The machine's gentle action prevents chunkiness—assures a smooth, uniform mix.

Among the many General Mills products handled by Robo-Lift are Cheerios, Coco Puffs, Kix, Trix, Hi-Pro, and 25 different cake mixes.

LYNCH
CORPORATION
Anderson, Indiana

How Flexible Wraps Can Help You Tighten Up On Packaging Costs

Are you permitting needless expense by "over packaging" your products? Did you know that there are *flexible wraps* available which can give positive protection from damage by water, moisture, dust, dirt, staining or rough handling? The important point is, *the cost of these flexible wraps can be many times less than other packaging materials.*

Sisalkraft's flexible wraps are made by laminating together any number of materials to form a protective sheet. We combine paper, foil, plastic film in any desired mix, and add tough fibers for extra strength, if needed.

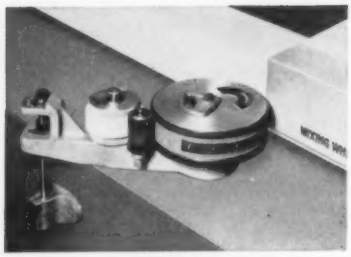
Send for information that will show your shipping room head how these products will help you tighten up on your packaging costs. American Sisalkraft Corp., Attleboro, Mass.

SISALKRAFT

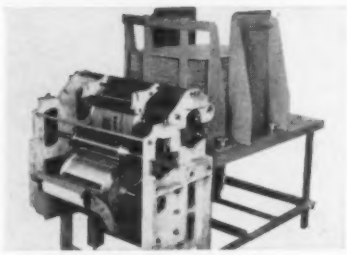
AMERICAN SISALKRAFT CORPORATION
Chicago 6 • New York 17 • San Francisco 5
In Canada: Murray-Brantford Ltd., Montreal

reinforced paper, foil and plastics for construction, industrial packaging and agriculture

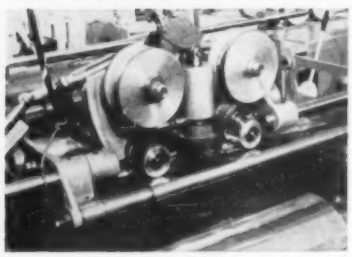
Make these IME machines your standard for comparison in marking, dating and coding equipment



WHIPPET MARKER® automates imprinting of conveyor-carried containers of all types. Driven by the conveyor and self-inking, it marks your containers as you use them. Attaches easily to any conveyor line.



#7 AUTOPRINTER® automatically imprints one or both sides of cartons and multi wall bags at speeds up to 3000 per hour. Prints clear impressions on any flat, absorbent surface regardless of minor surface variations.



RAINBOW CODER® offers you a wide color range in sharp, clear, controlled impressions on any surface that will accept hot roll leaf imprinting. Designed to be synchronized with speed of the packaging machine, it requires no operator, no ink, no makeready and very little maintenance.

Before you buy any marking or imprinting machine be sure to check on the I. M. E. line. These machines set the standards...for speed...for versatility...for rugged durability . . . for accurate, clear imprinting. You can find cheaper machines, but you can't find better dollar-for-dollar value in long-run economy and trouble-free, efficient service! Write today for our new catalog — it's yours for the asking. Department P.E.

UNUSUAL PROBLEM? If you have a special problem in product handling or identification, remember this: IME offers complete design and engineering services.

Visit us at Booth 101 P.M.M.I. Show

ime

INDUSTRIAL MARKING EQUIPMENT
655 BERRIMAN ST. | company, inc.
BROOKLYN 8, N.Y. | NI 9-3305

Charles C. Spencer has joined the Pittsburgh sales office of Mosinee Paper Mills Co. Also at Mosinee, **C. M. Green** has been elected executive vice president . . . At Dewey and Almy Chemical Div., W. R. Grace & Co., **George B. Kafka** is now Midwest sales manager of closure sealing compounds, and **Charles E. Brookes** is manager of marketing of the organic chemicals Division.

Management changes at Hoerner Boxes, Inc.—**C. M. Carson** becomes executive vice president; **J. C. Perry** replaces Mr. Carson as general manager of the Minneapolis plant; **C. C. Jackson, Jr.** replaces Mr. Perry as sales manager at Minneapolis; Vice president **J. F. Raney** assumes new position of director of marketing . . . **Jack Welsch** has joined Thatcher Glass Manufacturing Co., Inc. as vice president, glass container sales.

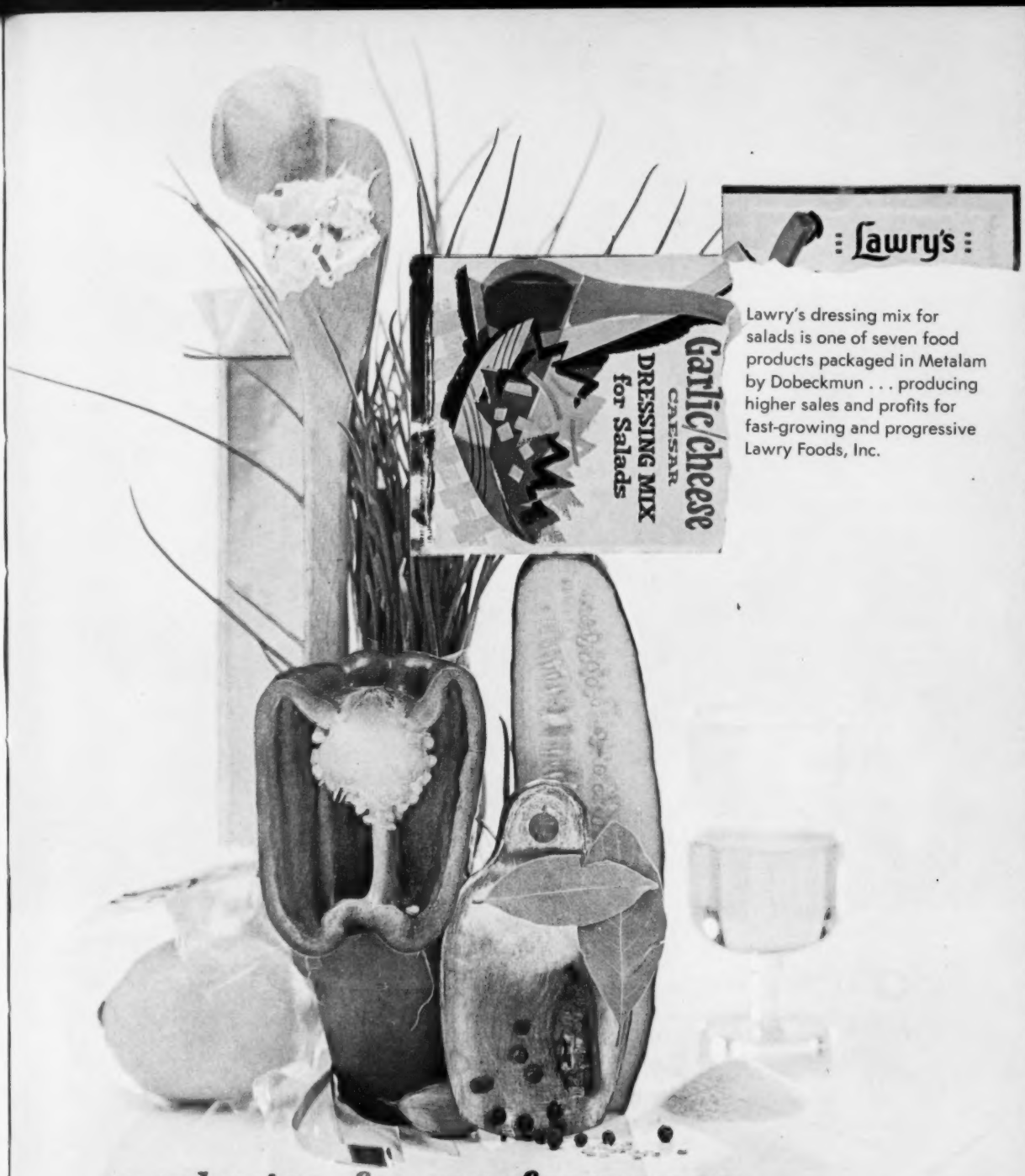
At Hinde & Dauch's central testing laboratory, new assignments are: **Edmund W. Carney,** new position of development engineer; **Joseph P. Guerra,** junior development engineer under Mr. Carney; **Foster Ewing,** technical service engineer for manufacturing in the quality control department . . . American Viscose Corp.'s film division has promoted **Edward L. Woolley** to assistant plant manager (he continues as chief engineer); **Dr. Clinton W. Tasker,** manufacturing superintendent of Fredericksburg cellophane operations; **A. W. Hogeland** remains Fredericksburg plant engineer and assumes duties of assistant chief engineer. Changes in Avisco's sales force—**Donald F. Ott,** representative Grand Rapids; **Robert M. Beisch,** Chicago; John Keth, manager for Avisco meat casings, Chicago.

New members of Crown Zellerbach's board of directors are **Peter T. Sinclair, King Wilkin,** and **G. E. Young.** Changes in Gaylord Container Div.'s engineering and production departments are **G. Keith Provo,** manager of general production and **Alanzo Richardson,** manager of engineering . . . **Frank A. Ross** is now manager, research and development, New Era Manufacturing Co. . . . Puritan Chemical Co. has named **R. Carl Chandler** and **Raymond C. Hagel** directors of the company . . . **Erskine C. Ingram** will manage Weyerhauser Co.'s paperboard mill, Delair, N. J.

L. J. Moore has resigned as sales manager of food packaging department of Sutherland Paper Co. **T. W. Froom,** formerly sales promotion manager, assumes Mr. Moore's duties . . . **H. J. Endean** has been named manager of closure sales for Aluminum Co. of America . . . Promotions at Monsanto Chemical Co.'s West Coast plastics division are—**David M. Williamson** fills new position of director of manufacturing, **Roland H. Dunlop** becomes plant manager, and **John F. Fincke** is now assistant director of research. *(End)*

For more information circle No. 214 on Reader Service Card, Page 107

Circle No. 215 on Card, Page 107



Lawry's dressing mix for salads is one of seven food products packaged in Metalam by Dobeckmun . . . producing higher sales and profits for fast-growing and progressive Lawry Foods, Inc.

packages for performance

DOBECKMUN

METALAM® proves itself the convenient Answer-all in convenience food packaging. A pioneer product of Dobeckmun creative ingenuity, Metalam protects foods and pharmaceuticals from air, moisture, light and chemicals. It is pliant, durable and takes wonderfully to all forms of printing. America's shopping carts are filled with the proof that superior containers and overwraps help move the goods in Packages for Performance by THE DOBECKMUN COMPANY, A Division of The Dow Chemical Company, Cleveland 1, Ohio • Berkeley 10, California • Offices in most principal cities.

Gallon and Quart bottles courtesy of Vanguard Plastics, Inc., Freehold, N. J.

O-o-o-o-o-o-p-s !

Thud! No crash, splatter, splash! But just plain thud! This bottle resists breakage because it's made of SUPER DYLAN® high density polyethylene. The gallon size weighs only 3½ ounces, yet it protects its contents . . . and the user, too! It's the bottle with the built-in bounce!

More than shatterproof, SUPER DYLAN bottles are rigid and light in weight—less than 1/10 the weight of gallon *glass* bottles. Needless to say, lightness like this cuts shipping expenses and simplifies handling.

Cost? Very economical. For sheer good looks you can just about name the color you want in SUPER DYLAN. Printability? It's easy by normal procedures.

SUPER DYLAN can be easily blow-molded into bottles of all sizes and shapes. You can use it to package almost anything. Acids, sure. Detergents, too; and cosmetics, pharmaceuticals, bulk chemicals, shampoos and food products. SUPER DYLAN resists heat and can be readily sterilized.

Write for more information on SUPER DYLAN high density polyethylene for bottles. Koppers Company, Inc., Plastics Division, Dept. PG-119, Pittsburgh 19, Pennsylvania.

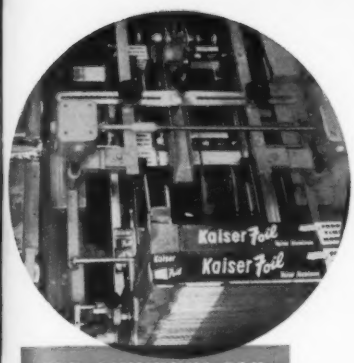
Offices in Principal Cities · In Canada: Dominion Anilines and Chemicals Ltd., Toronto, Ontario.

KOPPERS PLASTICS

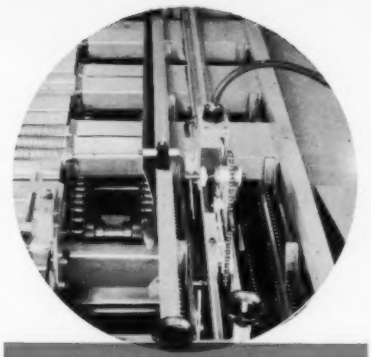
DYLENE® polystyrene, DYLITE® expandable polystyrene, and DYLAN® polyethylene are other fine plastics produced by Koppers Company, Inc.

KOPPERS

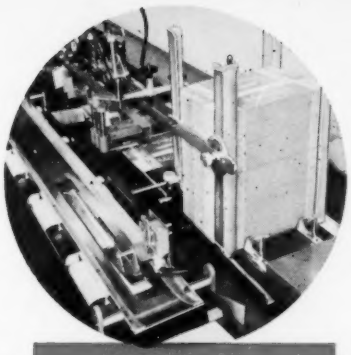
For more information circle No. 216 on Reader Service Card, Page 107



FOR ALUMINUM FOIL

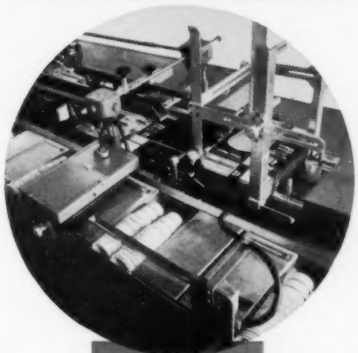


FOR COOKIES AND CRACKERS

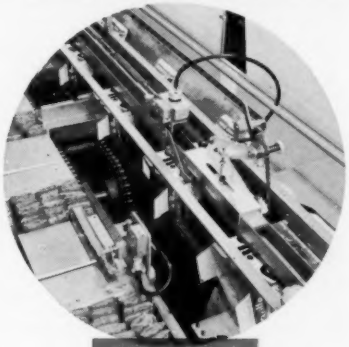


FOR SANITARY NAPKINS

PIES AND CAKES



PAPER CUPS



SOAP PADS

the perfect combination of speed and flexibility

CECO MODEL 50 AUTOMATIC

Here is the machine specifically designed for the problem package – rolls of aluminum foil, sanitary napkins, paper products, cookies – any product that can take advantage of CECO's bucket feed method. Automatic? Right, fully automatic. This is a constant motion cartoner in which the carton is opened, product inserted, and carton closed – automatically. The opportunities to save on labor costs are exceptional. Flexible? Right again! Changeover from a 7" roll of aluminum foil to an 18" roll takes less than 30 minutes. And, like all CECO cartoners, the Model 50 can be had to handle either glue or tuck style cartons and can be accessorized to meet individual requirements.

A MACHINE FOR EVERY REQUIREMENT

Other CECO machines include the Model 3901 glue sealing machine, the Model 40 semi-automatic cartoning machine, and the Model 45 fully automatic.

SEE US AT THE PMMI SHOW
BOOTH 1205

CECO

CONTAINER EQUIPMENT CORPORATION
BLOOMFIELD, NEW JERSEY

CONTAINER EQUIPMENT CORPORATION
78 LOCUST AVENUE, BLOOMFIELD, NEW JERSEY

Please send literature checked off:

☐ Model 3901 ☐ Model 45 ☐ Model 40 ☐ Model 50

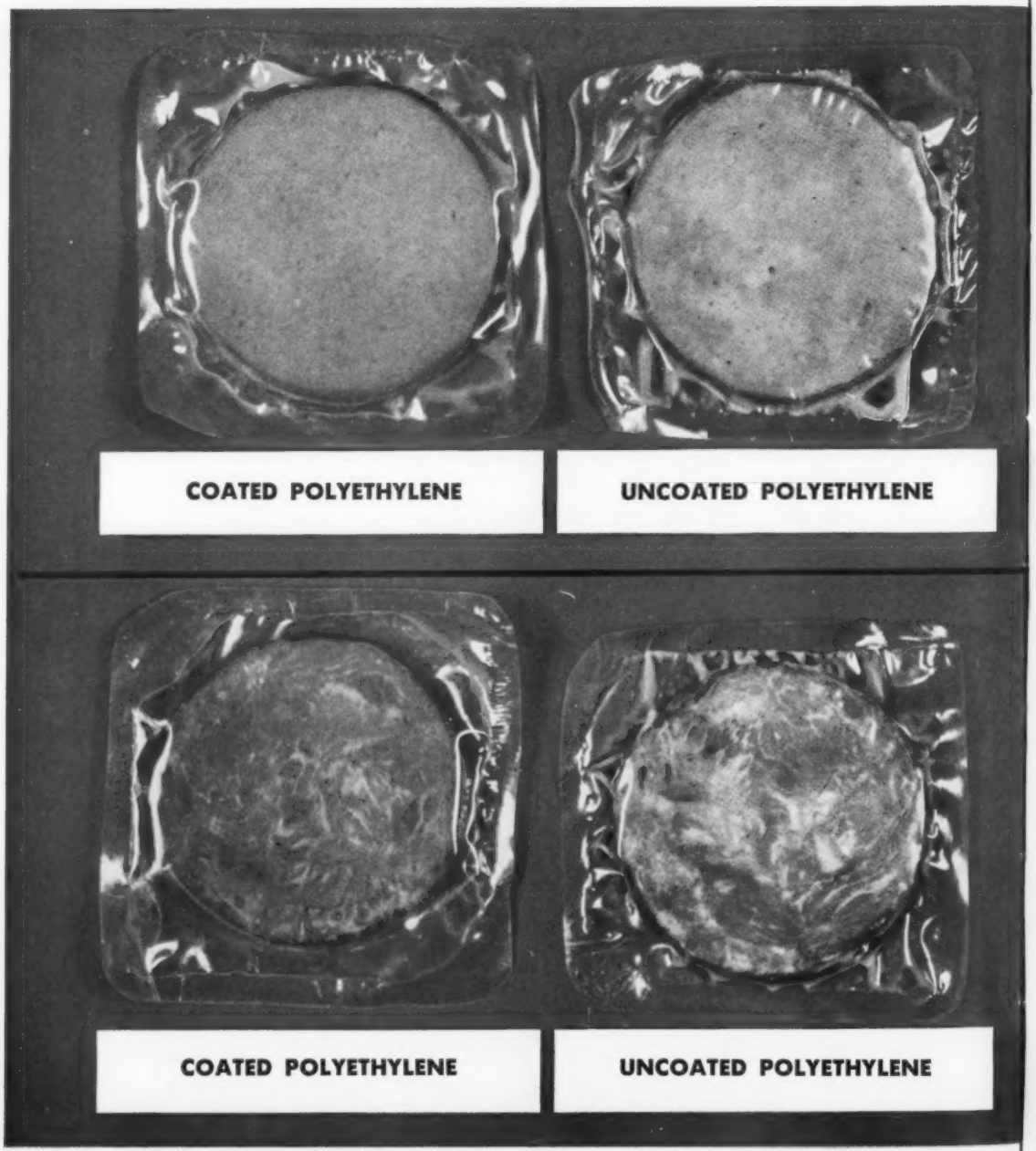
NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

SARAN COATINGS RESINS BOOST SHELF-LIFE OF



DOW **Plastiatrics**

DOW'S CLINICAL APPROACH TO HEALTHY PLASTICS APPLICATION

IFE OF POLYETHYLENE-PACKAGED FOODS

Pictured on the left-hand page is graphic proof of the degree to which saran resins add to the protective-barrier properties of polyethylene packaging film. Polyethylene's toughness, transparency, workability and low cost make it ideal for the packaging of countless goods and products of all kinds. Its relatively high permeability, however, limits its use as food packaging film. Up to now, that is!

The accompanying photographs show the results of one of the tests made during a Plastiatrics study conducted by Dow Coatings Technical Service Engineers.

Packages of identical Bologna and identical New England sausage, stored in cooler for 30 days. The inner coating of saran resin has prevented mold growth on the meat shown at the left of each set. The meat on the right, packaged in uncoated film, is badly molded.

By coating polyethylene with a thin inner coating of one of Dow's saran resins, the permeability to gases is greatly reduced. Resistance to grease and oil is increased. And the boost in over-all product protection is reflected in longer shelf-life for packaged foods. The bologna and sausage pictured on the left-hand page are typical of the types of foods which benefit greatly from saran coating protection. Others are similar meats and cold-cuts, cheeses, etc.

Saran resins can easily be applied to film by standard coating equipment. In fact, they *are* being applied at present as a standard coating operation for certain types of products whose ingredients actively attack and penetrate through uncoated polyethylene.

Saran resin/acetone solutions have low viscosity and a high rate of solvent release. Consequently, high solids coatings can be applied quickly.

Continuing Plastiatrics studies by Dow Coatings Technical Service Engineers are constantly developing new data and information on all phases of plastics formulation, design, molding and finishing. For further information on these studies, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 2392DM11.

AMERICA'S FIRST FAMILY OF THERMOPLASTICS

Styron*

Zerlon*

Ethocel*

Saran

Polyethylene

PVC Resins

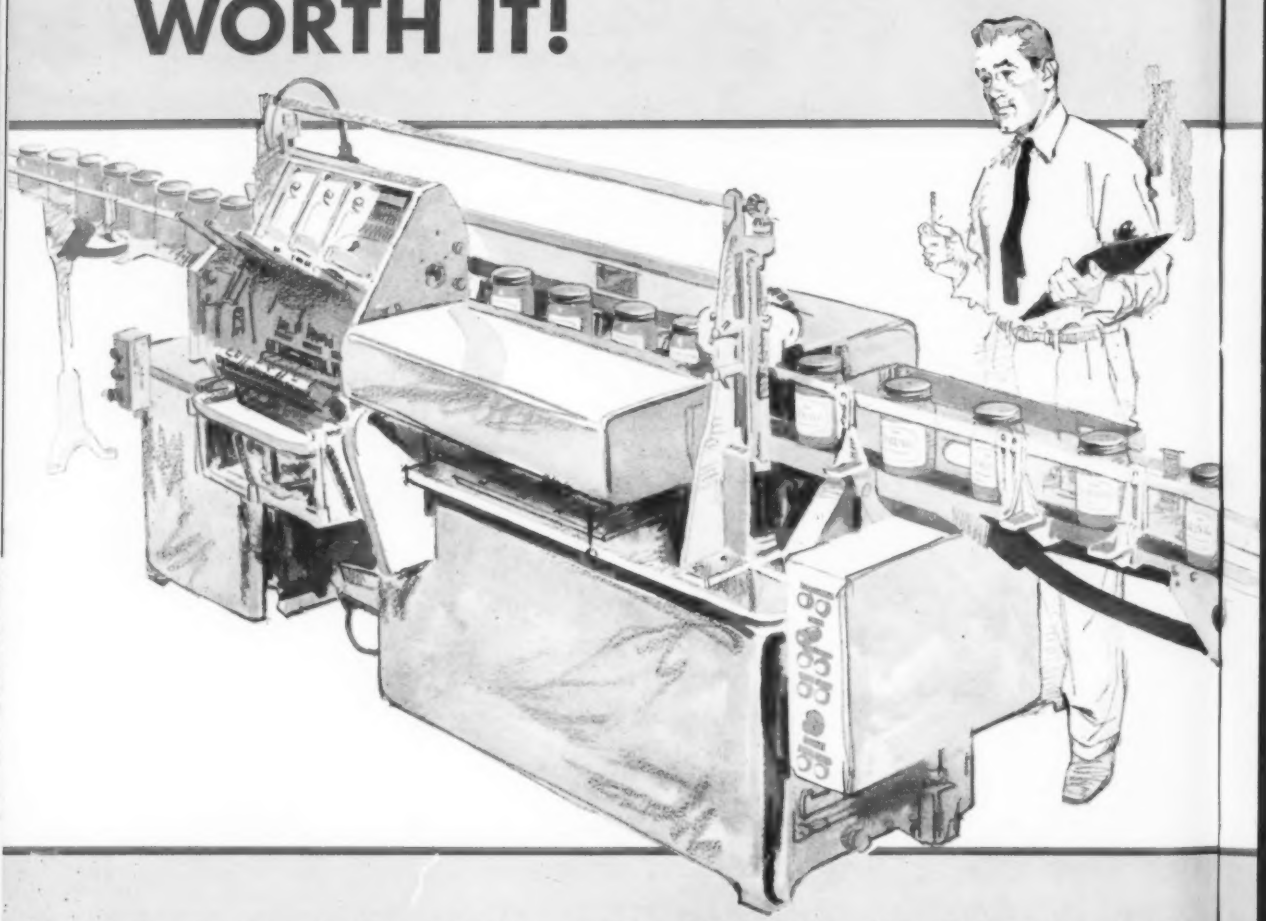
Pelaspan*

*Trademark

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

"Comparison

THE WORLD SUPER C. M. COSTS MORE . . . AND IT'S WORTH IT!



Test after test . . . in plants of all kinds prove that the WORLD Super C.M. is the most versatile labeler made! That's a strong statement, but we think the facts on these pages back it up. Why not ask your labeling superintendent to compare your present equipment?

WHY PAY MORE? . . .

Basically to protect your labeling operation, *not just for the present*, but for long range needs too. Only the Super C.M. offers you this protection against size changes . . . increased speed requirements or new labeling ideas.

On a straight line amortization basis the Super C.M. actually *only costs pennies more per hour* and *repays you dollars more per hour*. The results more than justify the means. Ask your WORLD Sales Engineer for a specific proposal on your operation. No obligation, of course. We'll be happy to let the facts speak for themselves.

nproves it!"

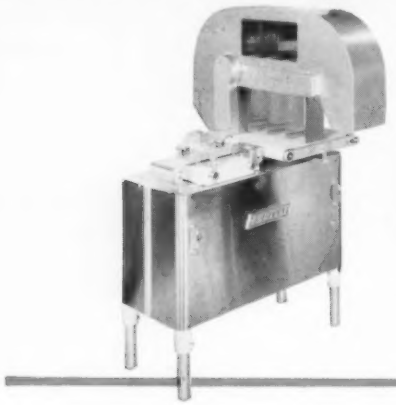
SPEED	VERSATILITY	LUBRICATION	ACCEPTANCE
Models are available for speeds up to 320 bottles per minute.	Any size or shape of container can be run on this machine now or at any future date. Tapered tumblers, bell-shaped containers, flats, rounds, squares, what have you—anything that can be handled by machine can be handled on the Super C.M.	A built-in timing system automatically lubricates all bearings on a predetermined basis—no danger of breakdown through a lubrication failure.	Economic has over 100 machines of this type in actual field installation and operation. The most widely accepted machine in the packaging industry today.
LABOR SAVING	**INSPECTION**	**ADAPTABILITY**	**LABEL APPLICATION**
You can put two WORLD Super C.M. Labelers back to back on adjacent packaging lines (right and left hand) and run two machines with one operator.	The WORLD Super C.M. is an inspector assuring you that a bottle or jar with a cocked or misapplied cap cannot go out to the trade . . . additional insurance that your product can never spoil because the cap is not properly applied.	Suppose an odd shaped label might be used as opposed to one that is rectangular. Again, the Super C.M. gives you positive assurance that you can handle any size or shape label within the range of the machine.	Label application is made in the center as opposed to the end, thereby reducing the effect of off-standard glass or labels to an absolute minimum. An advantage no other machine offers!
ACCESSIBILITY	**PREMIUM ABILITY**	**AIR OPERATED WIPERS**	**LESS OPERATOR TIME**
The label holder is in front of the machine not in back, eliminating the need for the operator to duck back and forth under the machine conveyor.	If your Sales Department decides to run a premium sale requiring a stenciled glue pattern so that the label will have a tear-off strip on it, you can run the glue pattern required.	The WORLD Super C.M. Labeler with air-operated wipers permits you to compensate for all off-standard label stock by allowing you to increase or decrease the pressure while running.	Case studies show as much as three extra operator hours per day can be spent on other things since the man no longer has to hover over the labeler to make sure it will operate and function properly.
AUTOMATION	**AMBIDEXTROUS**	**MAINTENANCE**	**REPAIR PARTS**
The Super C.M. has the ability to sense being out of bottles, (Air-O-Matic Drive) . . . the machine automatically slows down when out of bottles and automatically increases its speed as bottles again flow to it. It paces itself to line load requirements.	Do you ever anticipate handling half gallon containers or polyethylene bottles, You can . . . on a Super C.M.	The clean-up operation on a Super C.M. Labeler is simplicity itself (with no heavy gluing mechanism to remove and clean).	You can buy the electrical parts for the WORLD Super C.M. Labeler in any radio or television store if you ever need them.
FLEXIBILITY		**PRIVATE LABEL**	
The dynamics of change will apply in the future as they have in the past and quite likely at an accelerated pace. Can anyone then state irrevocably that a package will not change only because it hasn't changed in the past twenty years? The Super C.M. offers you a guarantee against being unable to handle a new package regardless of shape.		You can run as many as three or more different labels on the same package at the same time without any loss of operating speed or efficiency. Should you be a private brand packer you can run as many as four different customer labels on one size container simultaneously. No other machine has ever offered this advantage!	

Good Labeling Sells!

WORLD LABELERS

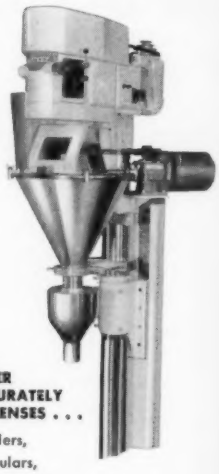
ECONOMIC MACHINERY COMPANY • WORCESTER 3, MASS. / Division of Geo. J. Meyer Manufacturing Company

Machinery for Creative Packaging



CHECKWEIGHER . . .

Speeds to 200 pm
Accuracy to ¼ ounce
Weights up to 2 lbs.
Continuous Motion
Electronic
Will handle most containers . . . open or closed.



FILLER ACCURATELY DISPENSES . . .

Powders,
Granulars,
Semi-liquids,
Liquids,
Pastes.

A PACKAGING PRODUCTION LINE . . .

Versatile Packager and Cartoner . . . integrated for efficient production. Automatically forms, fills, seals pouches . . . inserts one or more pouches per carton . . . broad range of package sizes and types.

BARTELT . . . performance proved

- **Quality Output** — Bartelt machines consistently provide quality production for many of America's favorite products.
- **Versatility** — Designed for fast change-overs as well as a wide range of package sizes and types; Bartelt versatility is unmatched.
- **Rugged Reliability** — Bartelt machinery has repeatedly been proven capable of meeting the highest production requirements.
- **Minimum Upkeep** — The simplicity, accessibility and ruggedness of Bartelt equipment assures minimum maintenance costs.
- **Custom Engineered** — Each Bartelt machine is designed to meet the customer's specific requirements.
- **Service** — from preliminary analysis of a packaging program, through the complete pre-delivery machine checkout, to the installation-instruction phase directed by experienced Service Instructors, our customers have found that with Bartelt . . . service is a concept.

Where Unfailing Quality Counts

BARTELT ENGINEERING COMPANY

1900 HARRISON AVE., ROCKFORD, ILLINOIS • NEW YORK OFFICE: 370 LEXINGTON AVE., N.Y.C.

For more information circle No. 220 on Reader Service Card, Page 107

Circle No. 221 on Card, Page 107

Ask your boxmaker about the 24 special linerboards by International Paper. They cost very little extra.

See how new Goldkraft by International Paper makes your containers stand out and sell

Now you can have a container like this for surprisingly low cost. Containers made from these special linerboards stand out from competition, promote brand identification, and billboard your best sales message wherever they go.

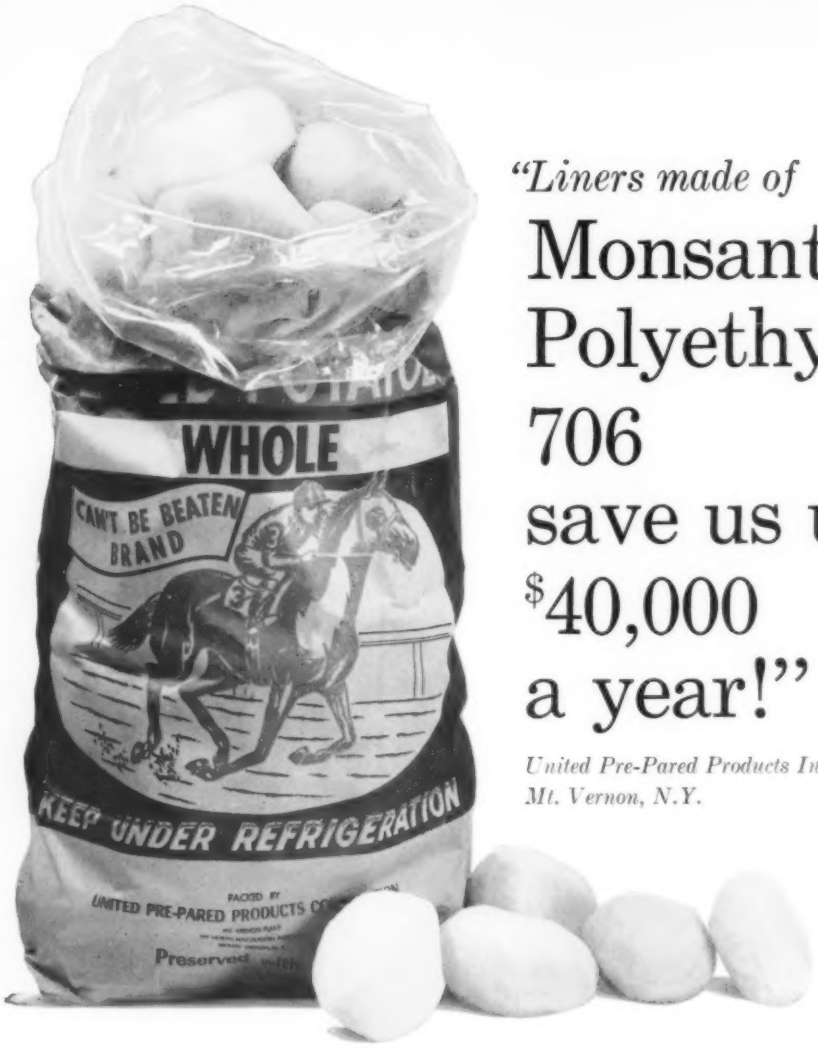
Just ask your boxmaker. He knows that International Paper has now perfected a way to mass-produce these special linerboards in one operation, at high speed, *right on the board-making machine!*

These special liners are as strong as they are handsome. Made from 100% virgin fibre pulp, they deliver the same rugged protection you find in famous *Gator-Hide*® kraft liners—the most widely used linerboards in the world.

New *Goldkraft*, the International Paper linerboard illustrated above, is but one of 24 special linerboards available through your boxmaker. All are distinctive. All offer excellent surfaces for printing a wide range of colors.

Ask your boxmaker to show you samples of International Paper's selection of linerboards that dress up your containers at surprisingly low cost. Or write to us direct.

Southern Kraft Board Division **INTERNATIONAL PAPER** New York 17, N.Y.



"Liners made of

Monsanto Polyethylene 706 save us up to $40,000 a year!"

United Pre-Pared Products Inc.
Mt. Vernon, N.Y.

United Pre-Pared Products ships about a million bags of peeled or french-sliced potatoes to institutions each year. They must reach the customer in perfect condition. No pressure bruises or splits—especially no soiling.

Only polyethylene film with its moisture vapor impermeability and tensile strength can do this over-all job. And United discovered this to their reward and satisfaction.

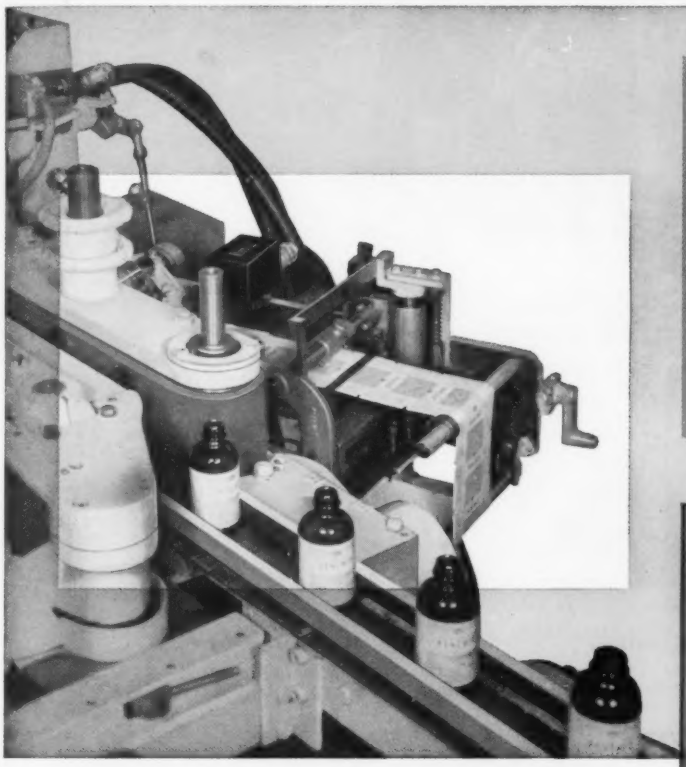
"For years, we used liners made of another material, and we often encountered difficulty in getting positive protective closures. Occasionally these liners, under great stress, would split and were sometimes difficult to separate since the sides stuck together. The result: delays and pile-ups on our production line. After switching to polyethylene liners made of Monsanto Polyethylene 706, these difficulties were eliminated. As a matter of fact, exclusive use of Monsanto polyethylene liners has cut liner costs *in half*, reduced breakage in transit by at least 30%. Liner savings alone amount to as much as $40,000 a year!"

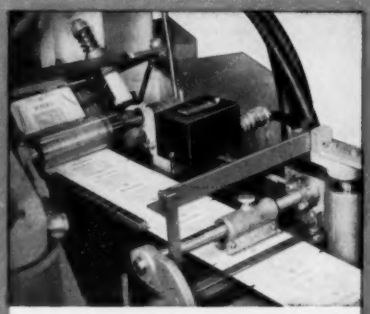
Guarantee dependable packaging service bag after bag, liner after liner. Order polyethylene packaging film based on "Tough 706," the Monsanto resin specifically developed for industrial packaging. For names of converters or suppliers, write to Monsanto Chemical Company, Plastics Division, Room 1006, Springfield 2, Mass.

Monsanto

New roll feed "no glue" labeling

Automatic verification, coding, protection and control





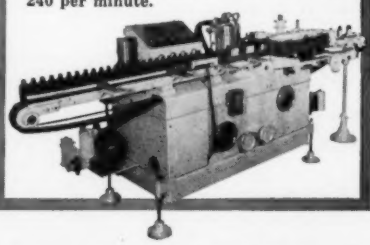
Shown here is the imprinting and coding head and electric eye controlled cut-off.

The Label-DRI Challenger complete with electric eye-controlled roll label feed. Speeds up to 120 per minute.

Also available:

The Semi-Automatic Pony Label-DRI. Speeds up to 60 per minute.

The Label-DRI Champion. Speeds up to 240 per minute.



Three New Jersey Label-DRI models now available

You get fast, fool-proof "no glue" labeling with these new roll feed Jersey labelers.

1 **Automatic label verification**—Once the first label has been checked, you know all other labels in the same continuous web must be the same.

2 **Automatic label coding** – Each label gets a clear imprint just before being applied to the container.

3 **"No-glue" labeling** – Labels in roll form are printed on thermoplastic label stock. You eliminate adhesive coating and are sure of more attractive label application.

4 **"Greater labeling efficiency"** – Eliminates mechanical separation of labels. No hopper to be set or reset to take care of label-cutting variations. No "doubling" due to "cling" caused by static electricity – ink offset – or dull cutting.

Check the Jersey Label-DRI that's best for you. Ask for details and a demonstration.

MAKERS OF THE PONY LABELRITE · NJM · NEW JERSEY MACHINE CORP

NEW JERSEY MACHINE CORPORATION

AUTOMATIC LABELING • CARTONING • PAPER BOX MACHINERY

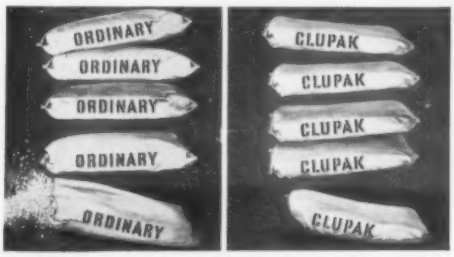
FACTORY SALES AND SERVICE BRANCHES | 1701 CAREW TOWER, CINCINNATI 2, OHIO | 325 W. HURON ST., CHICAGO 10, ILL. | 2500 W. 6th ST., LOS ANGELES 57, CALIF

MAIN OFFICE & PLANT • 16th ST & WILLOW AVENUE, HOBOKEN, N J

For more information circle No. 223 on Reader Service Card, Page 107

YOUR CLUE TO BETTER PAPER PRODUCTS... EXTENSIBLE CLUPAK PAPER

WRAP ANYTHING in CLUPAK paper—from potted plants to furniture, from car parts to boats—with new ease and safety! Extremely tough, flexible CLUPAK paper solves many protective problems.



DROP TEST proves far greater toughness of multiwalls made with CLUPAK kraft. It permits use of fewer plies, and lower total net basis weight—cutting cost of sacks, even as performance is improved.

STRESS FAILURE common with ordinary paper is far less frequent with CLUPAK paper, because patented, built-in stretch absorbs much of the shock energy. Shifting of groceries in ordinary bag above causes rupture—an example of why many food stores now use CLUPAK kraft bags.

DISCOVERY GIVES PAPER NEW "*TOUGHNESS*" ...MAKES IT ABSORB SHOCKS INSTEAD OF TEARING

BETTER PERFORMANCE, LOWER COST! CLUPAK Extensible Paper opens a new era in paper . . . makes it virtually a new material, with unlimited applications. For CLUPAK paper has a built-in *stretch* or extensibility which lets it absorb the shocks and strains that cause ordinary paper to rip, tear and puncture. The result is a new dimension in paper—*toughness*. And the greater *flexibility* of CLUPAK paper is important where folding, bending, wrapping or filling is involved. Already CLUPAK paper is giving multiwall sacks, grocery bags, magazine wrappers, asphalt and decorative laminates, protective bags, polyethylene coated papers and many other products better performance, often at lower cost.

KEY FACTS FOR BUYERS

1 CLUPAK kraft is the same as ordinary kraft except that it is stronger, tougher and more flexible.

2 CLUPAK paper can be made in many basis weights and with varying degrees of stretch. Printability, surface friction, porosity and other properties can be controlled as with ordinary paper.

3 CLUPAK paper toughness and flexibility open up unlimited new uses for paper. Clupak, Inc. carries on continuous research and development work and results are made available to all licensees.

4 CLUPAK, INC. permits the use of its trademark only on paper which meets this company's rigid toughness requirements.

Clupak, Inc., 530 Fifth Avenue, New York 36, N. Y.

BE SURE TO LOOK FOR THIS TRADEMARK

EXTENSIBLE CLUPAK® PAPER *

**Clupak, Inc.'s trademark for extensible paper manufactured under its authority.*

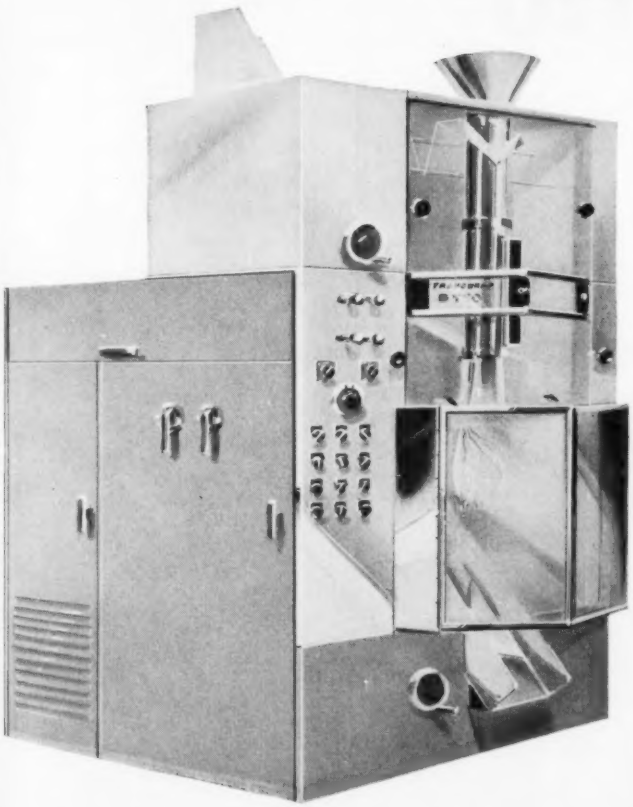
Buy CLUPAK paper and products made with CLUPAK paper from:

Albemarle Paper Mfg. Co.
Calcasieu Paper Co.
Canada Paper Co. (Canada)
Crown Zellerbach Corp.
Continental Can Company, Inc.
Dynas Aktiebolag (Sweden)
Hudson Pulp and Paper Corp.
International Paper Co.
St. Lawrence Corp., Ltd. (Canada)
St. Regis Paper Co.
Union Bag-Camp Paper Corp.
West Virginia Pulp and Paper Co.

SEE IT AT THE PACKAGE BOOTH 805

INTRODUCING THE TRANSWRAP S-750

Forms and Fills up to 75 bags a minute



That's only one feature of the Transwrap S-750, a completely new machine. Here's the kind of outstanding automatic packaging you can expect from Package Machinery. New modern appearance . . . styled by Peter Muller-Munk Associates, foremost industrial designers. Advanced engineering to produce more efficient, high-speed packaging. Exclusive new features of the Package Transwrap S-750 include:

- Modern push-button electrical controls that simplify operation
- Quick and easy bag length and speed adjustments
- Wide size range—forms bags 3″ to 15″ long, 2″ to 8½″ wide
- Bag size changes require less than 15 minutes
- Overall machine height of only 7 feet
- New plug-in end seal assembly for fast film changes
- Sealed ball bearings eliminate lubrication
- Ease of maintenance—dust and water tight mechanisms
- All standard feeds available

The Transwrap S-750 runs polyethylene, and all other flexible, heat-sealable materials. Handles all free-flowing products and is especially adapted to pouch packaging of frozen vegetables and candy products. Get all the facts on this revolutionary machine from your PACKAGE Sales Representative today.

SEE US AT NEW YORK COLISEUM PACKAGING MACHINERY MANUFACTURERS INSTITUTE SHOW NOV. 17 thru 20 1959

PACKAGE MACHINERY COMPANY, EAST LONGMEADOW, MASS.
NEW YORK • PHILADELPHIA • ATLANTA • BOSTON • CLEVELAND • CHICAGO • KANSAS CITY
DALLAS • DENVER • LOS ANGELES • SAN FRANCISCO • SEATTLE • TORONTO • MEXICO CITY

PACKAGE

For more information circle No. 225 on Reader Service Card, Page 107

Expanded development and production facilities now make possible broader lines, improved quality and lower cost of

REYNOLON® PLASTIC FILMS

New solvent recovery unit makes possible more efficient, lower cost production of quality Reynolon films.

Reynolds plant at Grottoes, Virginia covers 126,000 square feet. It is one of the most modern and best equipped plants of its kind in the country.

For more information circle No. 226 on Reader Service Card, Page 107

Leading companies in diversified industries use Reynolon polyvinyl alcohol and polyvinyl chloride films for a variety of uses. Here are some of the most popular Reynolon films:

REYNOLON PVA FILMS: *Reynolon PVA*/4-6 series is designed for bag molding. It speeds production—is far less costly than matched metal dies. Ideal for molding reinforced plastic parts . . . *Reynolon MBA*/4-3 series is a "super-pli" film developed to improve adhesive metal bonding. It takes temperatures to 500° F and pressures required to insure a satisfactory bond. Extremely pliable, easily formed . . . *Reynolon Water Soluble* film is completely soluble in water—ideal for packaging solids, liquids, powders. Film is individually tailored to each specific application . . . *Reynolon Matte-Finish* is a new film designed for use in furniture, cabinet and wall panel fabrication.

REYNOLON PVC FILMS: *Reynolon Cast Vinyl* films are available for skin packaging, for use as glass substitutes, for fabrication on protective cover products, inflatables, oxygen tents and other applications. They are clear, durable, chemically inert, have low moisture vapor and gas transmission rates, are heat or electronically sealable, printable, colorless, non-toxic.

Reynolon Shrinkable Oriented PVC is a new film ideal for packaging of meats, vegetables, fruits and a variety of products such as window shades, stationery supplies, paper products and many others. This film is crystal clear, shrinkable to form a skin tight package. It has high tensile strength, offers low temperature flexibility, has good shelf life. Printable and sealable by heat, by solvents or by adhesives. It can be metalized. Easily laminated to paper, chipboard and other materials.

For details and technical assistance on Reynolon films, contact the Reynolon Plastic Specialist in the Reynolds office in New York, Camden, Detroit, Chicago, St. Louis or Los Angeles. Or write *Plastics Division, Reynolds Metals Company, P.O. Box 2346-RP, Richmond 18, Virginia.*

REYNOLON
PLASTIC FILM
PLASTICS DIVISION
REYNOLDS METALS COMPANY

PLASTICS DIVISION • REYNOLDS METALS COMPANY

Modern control panel for mixing system. Resin is weighed, solvents are metered and conveyed automatically to mixers and to holding tanks.

An inspector watches Reynolon 54" PVA film come off a bandcaster.

A Flavor Retention Test on Cookie Packaging . . . typical of hundreds conducted at Du Pont's Film Department Technical Laboratories to evaluate freshness protection offered by various cellophanes.

Tests like this help Du Pont develop cellophanes that lock in flavor and freshness longer

Does your package have to block the escape of volatile oils and flavorings . . . keep cookies, chips or cereals crisp . . . or prevent sugar crystallization and powdering of hard candies or hardening of marshmallows?

Name the protective job your package must do. There's a special Du Pont cellophane to do it, to protect and keep your product at the peak of appeal—from factory, to warehouse, to retail store, to consumer.

The superior, new polymer-coated Du Pont "K"* cellophanes, for example, lock in flavor far longer . . . combine unique protective properties with brilliant transparency, extra durability. And, like all of Du Pont's over 100 types of cellophane, they give you top high-speed machine performance.

Tests like the one shown above assure that you get the cellophane tailored to meet *your* needs . . . when you specify Du Pont cellophane by the proper code designation.

Du Pont can help you with your packaging problems. Talk to your Du Pont Technical Representative. *Ask for the Du Pont booklet, "Properties and Uses of Cellophane"*. Or write: Du Pont, Film Dept., PE-11, Wilmington, Del.

**Du Pont Trademark*

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

DU PONT cellophane

THE NEW YORK COLISEUM

Nov. 17 through Nov. 20—P.M.M.I. Show—Booth 816
Nov. 30 through Dec. 4—Exposition Chemical Industries—Booth 50

COLTON

Finest tablet presses, punches and dies, granulators, mixers, ovens, special machinery. Leading specialist in accurate small-fill equipment for high production filling of any containers, and filling and sealing metal and plastic tubes.

COLTON-HOPE

Most versatile machines for accurate, high-speed filling of high and low viscosity products into a wide range of containers.

COLTON-*Alpha*

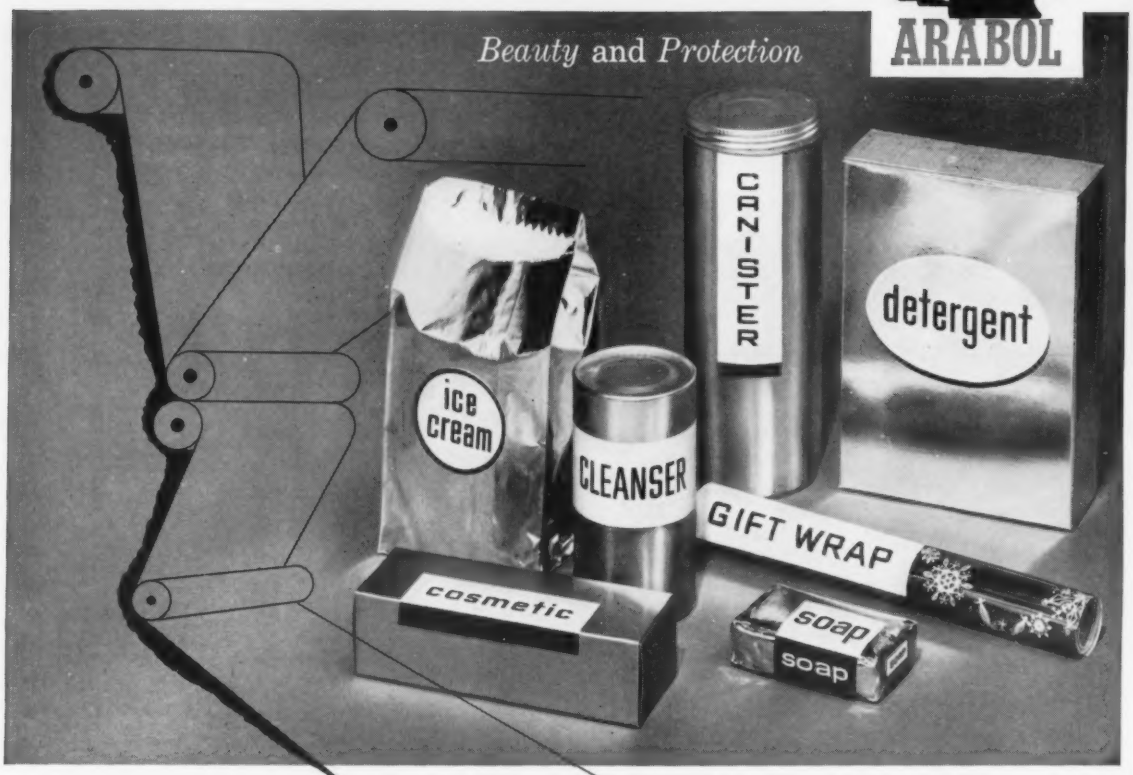
Finest aerosol engineering in the newest, simplest, completely coordinated equipment for high or limited production.

ARTHUR COLTON COMPANY
Detroit, Michigan
Established 1884

WORLD'S MOST COMPLETE LINE OF FILLING AND SEALING EQUIPMENT

Headquarters for SPECIFICATION ADHESIVES

ARABOL



FOR LAMINATING *all types of flexible materials*

Modern packaging, wrapping and labeling frequently call for combinations of foil, film, textile, leather, paper or paperboard—fabricated with special, dependable adhesives. The aim may be simply for finer appearance or for some special barrier against heat, cold, moisture or rough handling.

In each case, it is a special problem; an engineered selection of materials—*and adhesives*. And nowhere is the value of ARABOL Specification Adhesives more clearly demonstrable. At little or no extra cost, your adhesives are specification-formulated—in terms of the exact materials to be combined and the exact methods and working conditions under which you will use them.

For all your adhesives requirements—whether in the making of your product or in its packaging, wrapping, labeling or shipping—we invite the opportunity to submit formulated samples—for tests to be made in your own plant—under your particular working conditions. That is the one kind of testing that assures you of satisfactory results.

Our fourteen plants and warehouses—plus four laboratories—are your assurance of service and delivery. It is our privilege to serve both large and small users. May we send you a booklet suggesting 23 basic specifications you should consider before you next buy adhesives?

GOVERNMENT SPECIFICATIONS ON ADHESIVES: If you are working to Government Specifications, call on our long experience in service to the Military and other Government Agencies.

THE **ARABOL** MFG. CO.
a nationwide organization serving major users of industrial adhesives
EXECUTIVE OFFICES: 110 East 42nd Street, New York 17, N.Y.
CHICAGO • SAN FRANCISCO • LOS ANGELES • ST. LOUIS • ATLANTA
PHILADELPHIA • BOSTON • PORTLAND, Ore. • ITASCA and
McALLEN, Tex. • CINCINNATI • DENVER • TAMPA • LONDON, Eng.

74 YEARS OF PIONEERING IN THE MAKING OF ADHESIVES

I SAY, OLD BOY,

Crossett Bleached Food Board makes a GOOD SHOW for English muffins. It can jolly well do as much for your product.

Jane Parker English Muffins
for BREAKFAST SERVE WITH JELLY, MARMALADE or HONEY
for LUNCH or DINNER TREAT YOUR FAMILY TO DELICIOUS
PIZZA ITALIENNE
DIRECTIONS FOR PREPARING
PIZZA ITALIENNE

Package Data for A & P Muffin Tray:

Produced by Berles Carton Co., Paterson, N. J. on four color offset press after wax laminating with greaseproof paper and sheeting. .016 Crossett Bleached Board was selected for its levelness after laminating, fidelity of color in process printing and freedom from mottle in solid areas

CROSSETT PAPER MILLS

A DIVISION OF THE CROSSETT COMPANY

GENERAL SALES OFFICE
CROSSETT, ARKANSAS

NEW YORK OFFICE
J. W. Taylor, East Sales Mgr.
G. R. Mattson
10 E. 40th St.

ATLANTA OFFICE
J. T. Allen
3127 Maple Drive
Room 210

DALLAS OFFICE
H. E. Manner
3409 Oak Lawn Ave.

CHICAGO OFFICE
D. Q. Hodge, West Sales Mgr.
L. J. Walker, D. W. Schwier
300 West Washington

CINCINNATI OFFICE
R. J. Lantry
3732 Lovell Avenue

Planned Packaging moves merchandise

Sold and still selling!

The corrugated container—workhorse of mass distribution—has long been known for its excellent product protection. Now it's fast becoming the Cinderella of packaging. Attractive, tinted background designs—even four-color half-tone printing, pioneered by Packaging Corporation of America—are transforming drab, rubber-stamped containers into eye-catching traveling billboards that sell their contents at every opportunity.

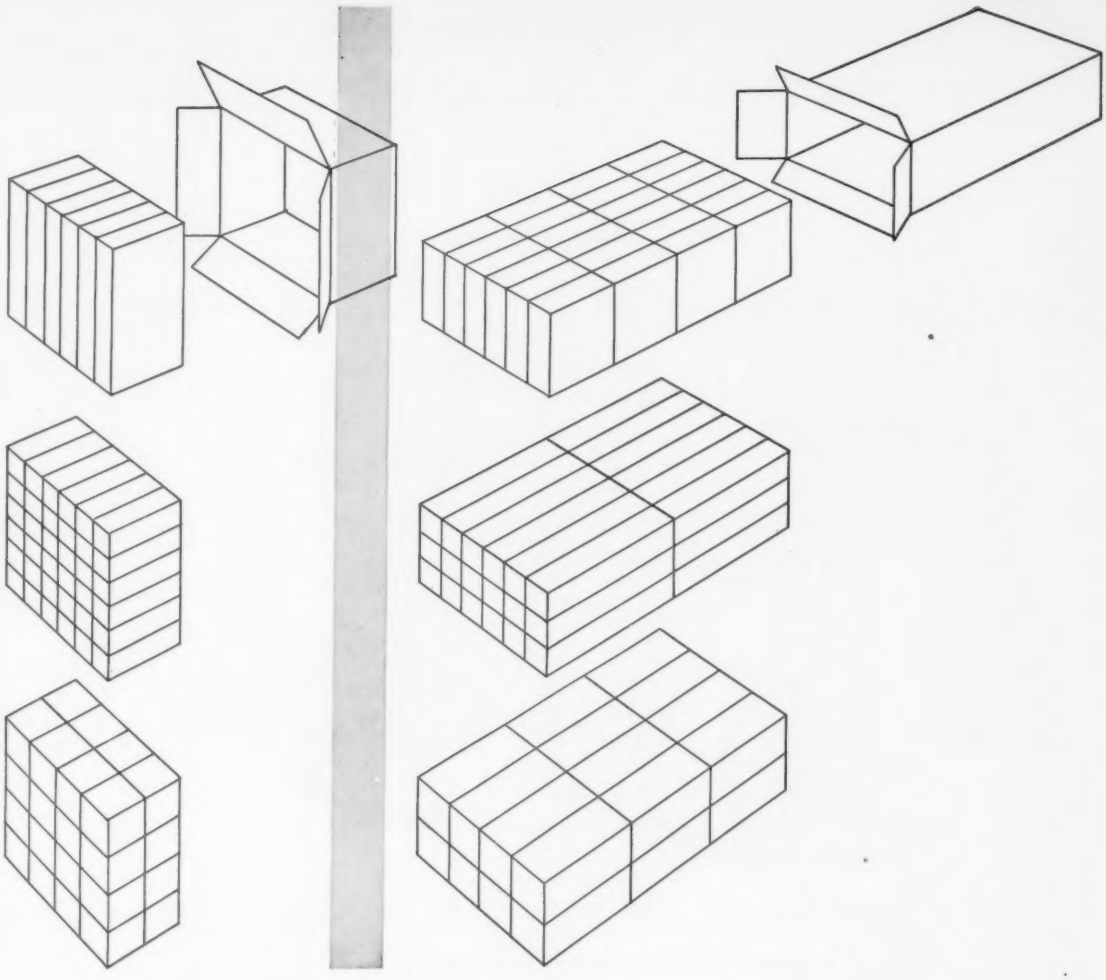
The skillful combination of art and package design is but one of countless ways in which Packaging Corporation of America's concept of Planned Packaging, implemented through integrated national facilities, produces better packaging . . . more sales. Whether your requirements are large or small, regional or national, we welcome the opportunity to help you.

Packaging Corporation of America

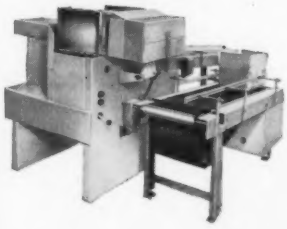
Administrative Offices: Grand Rapids, Michigan; Quincy, Illinois; Rittman, Ohio

Cartons • Containers • Displays • Egg Packaging Products • Molded Pulp Products • Paperboards

For more information circle No. 231 on Reader Service Card, Page 107



Whatever load patterns you want



The patterns above suggest the choices available for automatic, fast loading of cases (end-opening or top-opening) for whatever package type you use — if you select a machine from the Standard-Knapp 800 series. On one of this series, some patterns can be loaded as fast as 25-per-minute. This equipment is so designed that *nothing* can happen that's not right . . . *everything* happens that you do want. Call or write us — or ask one of your competitors' plant superintendents.

EMHART

Emhart Manufacturing Company
Portland, Connecticut
Standard-Knapp Packaging Equipment

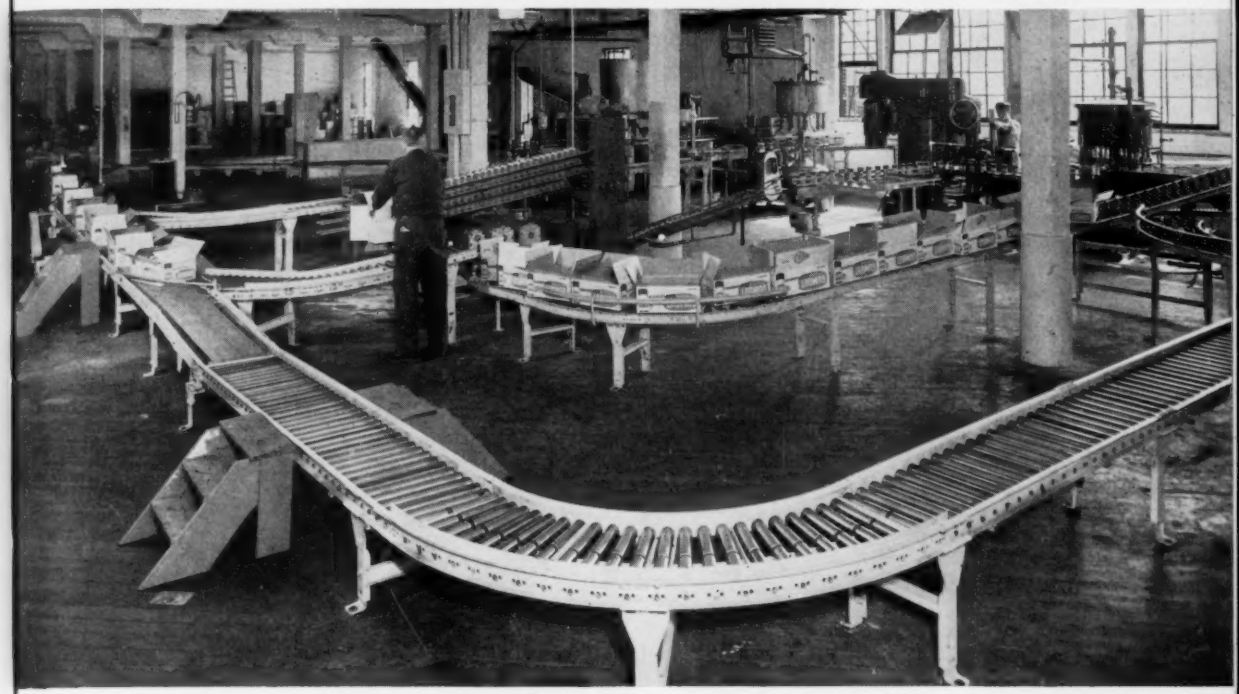
Corrugated box with built-in protection

Hotpoint ovens travel to kitchens in custom-designed Hinde & Dauch shipping boxes. Interior packing prevents damage, keeps appliances in factory-new shape. Does your product need king-size protection? Better see H & D.

Hinde & Dauch

Division, West Virginia Pulp and Paper

AUTHORITY ON CORRUGATED PACKAGING • SANDUSKY, OHIO
15 FACTORIES • 42 SALES OFFICES



NEW CANNING PLANT has four separate lines. Five-man crew moves from line to line. Finished goods move from machinery (rear) to out-going conveyor (front left) for case sealing discharge.

Five steps to better canning operations

By J. Edward Auen
Plant Engineer,
Pennsylvania Refining Company, Cleveland

Start with a basic plan
Choose the right equipment
Work out can and case movements
Set up specialized lines
Capitalize on production line shortcuts

There is no one thing to do or single step to take that will give you an efficient canning plant operation. Rather you must work out individual details of your operations and take special care to coordinate all the different facets of the project. Such was our experience when increased demand for our products forced us to expand our operation—and gave us an opportunity to set up a new battery of packaging lines upon moving to an adjoining building.

Prior to our present operation, we had a one-story structure with 11,000 sq. ft of usable floor space for all of our canning. Some 1,500 sq. ft. went to canning itself, and the remaining 9,500 sq. ft. served to store full and empty containers. Normal conditions required five men to operate the plant—plus additional help for loading and storing empty containers. We also needed extra help when running more than one canning line simultaneously. Other incidents of that operation included manual handling of containers and cases, and hand gluing and marking of all cases.

Over an 8-hr. shift, our average output of this plant was: 22 pt. and half-pt. F-style cans/min., 8 1- or 2-gal. F-style cans/min., 75

J. Edward Auen attended University of Pittsburgh and Fenn College, concentrating on the study of industrial engineering. Prior to joining Pennsylvania Refining Co., he was with Thompson Products, first as a plant layout engineer; later as an industrial engineer. He also was associated with Arthur G. McKee Co. as an industrial engineer. Mr. Auen is a member of the Society of Packaging and Handling Engineers.

round sanitary-seal qt. cans/min. This was not enough output.

Decide On New Plant

Faced with these low productive capacities, the only thing we could do to get additional production was to (1) let contract packagers do a large volume of our canning, and (2) go to temporary two-shift operations. **High costs and the difficulty of packaging certain commodities because of our lack of proper equipment led to our decision to improve our canning facilities and to choose new containers.**

Purchase of an existing, adjoining four-story building was the starting point of our project to develop a new canning plant. We also made changes in our containers. We decided to keep on using round qt. cans, as well as 1- and 2-gal. F-style cans. We replaced some of our pt. and half-pt. F-style cans by sanitary-seal round cans of 211 diameter.

These cans provide us tamper-proof packaging. They run readily on standard, high speed canning equipment which we could acquire quickly. We also ordered new corrugated containers to carry (in addition to company advertising) tear strips, retail display features and antislip coatings.

Key Points Of Plan

Four basic points formed the core of our planning process:

1. **Empty cans would arrive by rail** from our can maufacturers in reshipper corrugated boxes rather than bundles to simplify the handling and movement problems inherent in a multistory building.

2. **We would move and re-install existing canning equipment** with a minimum of operation changes. We thought this would give us maximum production at start-up and keep re-installation costs at a minimum.

3. **Empty container inventories would be 100 per cent greater** than full container inventory.

4. **Any new equipment purchased would have at least 100 per cent greater capacity** than our existing requirements.

Four New Machines Needed

At an early stage in our planning process, we decided that our minimum requirement would include four new pieces of packaging machinery:

1. **A Horix gravity filler.** In buying this, we let its manufacturer work out the problems of can transfer and the difficulties of valves and seals created by the different commodities to be canned. We specified a filler capable of speeds up to 240 cans/min. and equipped with a spiral infeed and turret discharge.

2. **An American Can seamer to close our cans.** We specified this unit capable of speeds up to 300 cans/min. and chose this particular model for its capacity for sustained production. Its design permits quick adjustability for speeds and setup from one can height to another. This seamer drives our filler. Cans transfer from the filler to the seamer by a smooth, straight-line chain conveyor.

3. **A Burt packer.** We chose this particularly for our use in packing 211 diameter cans in corrugated boxes. This equipment takes minimum space, has suitable productivity, quick setup time, and is protected against jams. Special features include its can run-down and can elevator.

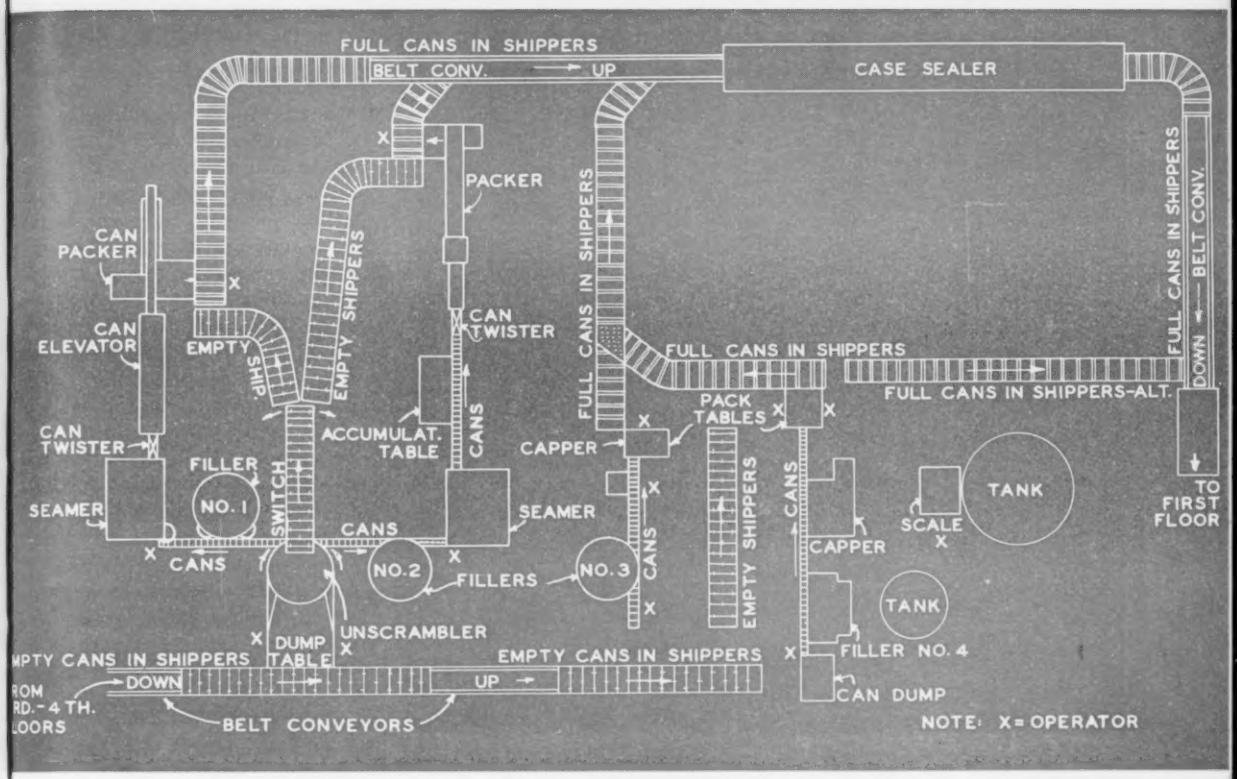
4. **An Elliott case sealer** for the gluing of our reshipper corrugated boxes. This machine is capable of sealing 15 maximum size cases/min. We chose it for its quick setup features, ease of maintenance, flexibility, and simplicity of design.

Moving Cans And Cases

A major phase of our project was developing a system of conveying cans and cases from one operation to another. Our entire system has just one section of flat chain-type can conveyor, and this, involved with our filling equipment, has its own drive and accumulating table. We wanted to keep our general system as simple as possible, using lightweight standard units. We used gravity conveyor wherever possible, thus greatly cutting our overall cost.

Our basic conveying system starts at the rail siding at second-floor level. Empty cans in corrugated reshipper boxes enter our building from a rail car by means of a portable wheel gravity conveyor leading to a belt conveyor. This is inclined at a 30° angle to our third floor. At the head of this belt conveyor is a gravity conveyor switch. This directs the flow of

Seeking peak production from a battery of four lines handling a variety of products and containers, Pennsylvania Refining Company installed a number of improvements when it moved its canning operations to new quarters. Mr. Auen (who spearheaded this project for his company) examines (1) basic planning underlying the revised operation, (2) selection and use of new equipment, (3) methods of package movement and transfer, (4) packaging line operations, and (5) special features contributing to stepped-up efficiency. He also reviews development of packaging line layout and flexibility of both products and containers, noting that some of their practices ignore "traditional" rules of can line layout.



WITH EQUIPMENT POSITIONED FOR EASY ALTERNATING OF PRODUCTION from line to line, battery of packaging equipment uses network of conveyors for case movement. Plant uses reshippers, stores empty cans in shippers on upper floors, keeps supply of full cans on first floor.

cases to the third and fourth floor storage area conveyor. There is an electric-eye device on this switch which prevents corrugated boxes from jamming on the inclined belt conveyor. Also this device counts the cases.

Diverting Case Flow

Long belt conveyors run the entire center length of both our third and fourth floors. We use travelling "diverts" to permit taking cases off these belt conveyors at any point, and these diverting devices move them onto gravity conveyors leading to the stacking areas.

By reversing the flow on the gravity conveyors, cases may move from storage stacks to the same belt conveyors and then to a 30° decline conveyor. This leads to the four can dumping stations on the second floor. We have an electric-eye device to prevent cases from jamming on the decline, and can time this to any combination of three belt conveyors.

Can Bypass Sealer

Another phase of our conveyor system is that all filled cans in cases enter a single belt conveyor from four packing stations on our main packaging floor. This belt conveyor feeds the automatic sealing equipment where cases are glued, closed, and marked.

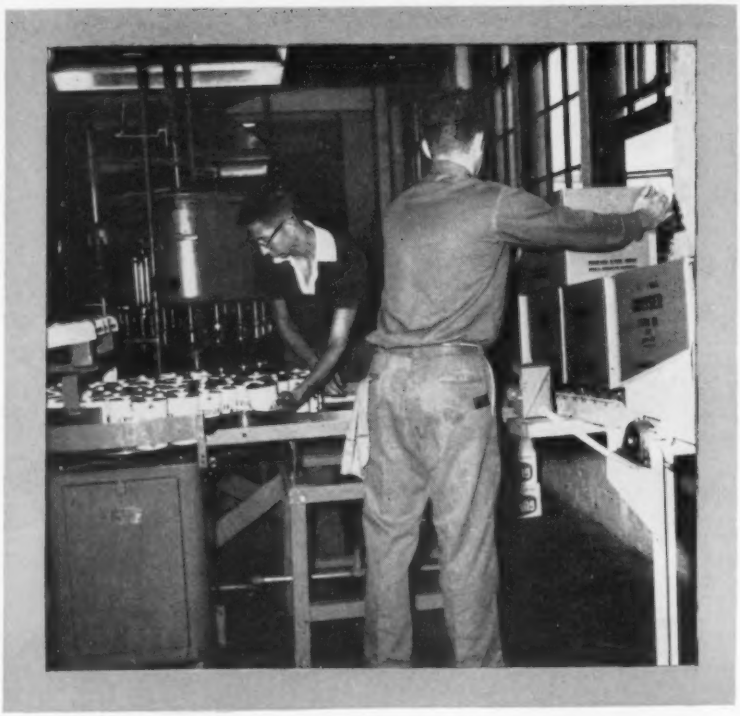
A declining, reversing belt conveyor moves the filled and sealed cases from the sealer to the first floor palletizing station. Here, filled and sealed cases are taken from the conveyor, palletized and stored in the first floor storage area.

The declining, reversing belt conveyor also handles filled, 5-gal. pails. In event that empty cans arrive by motor truck rather than rail, this conveyor reverses—to move these cans (in reshipper corrugated boxes) up to the second floor. At this point, the cases are diverted by gravity conveyor to the inclined belt conveyor leading to the third and fourth floor empty container storage areas.

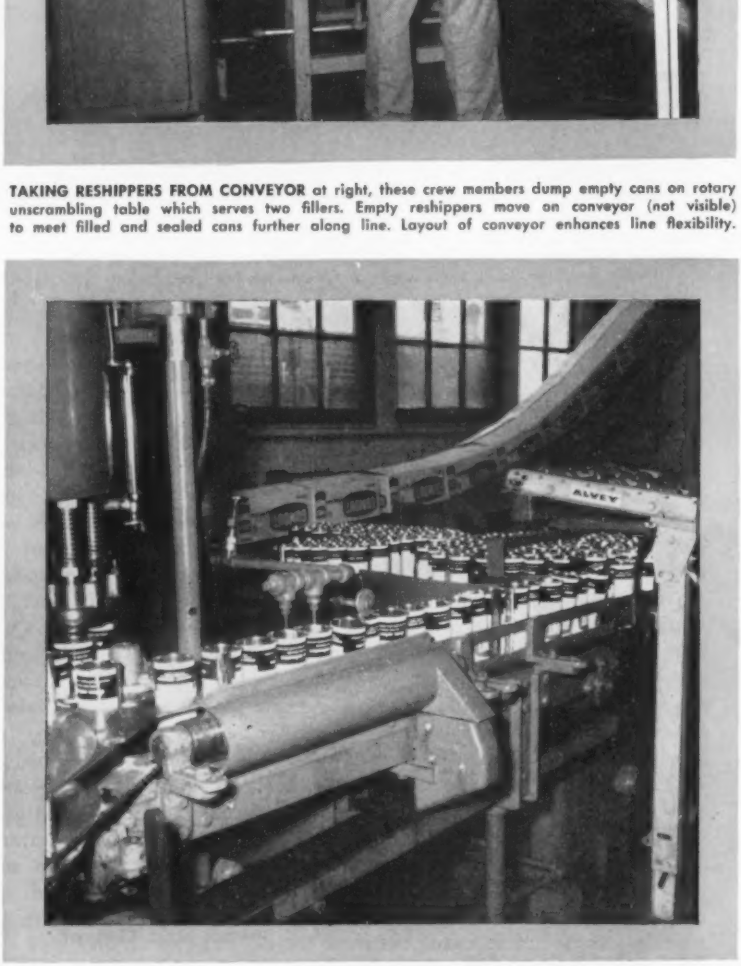
To provide flexibility we have a gravity conveyor system that bypasses the single case gluing machine to permit two can lines to operate simultaneously. When we do this, we have to use hand gluing and marking on the packaging line which bypasses the automatic sealing equipment. When doing this we employ a "traffic cop" device to regulate the flow from one conveyor to another (e.g., gravity to powered) and to push the gravity-fed cases back up to permit the power-conveyed cases to move along.

Speeds And Clearances

We operate all belt conveyors at 60 ft./min. with the exception of the inclined belt conveyor going



TAKING RESHIPPERS FROM CONVEYOR at right, these crew members dump empty cans on rotary unscrambling table which serves two fillers. Empty reshippers move on conveyor (not visible) to meet filled and sealed cans further along line. Layout of conveyor enhances line flexibility.



MOVING TOWARD FILLER (at left) empty cans pass under double air jet to blow particles out of cans. Cans also pass under four-prong device to catch up-side-down cans to prevent their entering filler. Cans move minimum distance to filler after passing air jets, thus assuring clean cans for filling.

from the second to the third and fourth floors. This we operate at 30 ft./min. in order to have an even pace for case stacking.

All our conveyors have 1 ft. 4 in. inside clearance with 3 ft. 4 in. radius curves. We use gravity skate wheel conveyors to handle empty cases and use gravity roller conveyors to handle filled cases wherever possible.

We have rough top rubber belts on all decline or incline sections over 10° and use smooth canvas belts elsewhere. One-half in. thin wall conduit serves extensively as conveyor guides and guards. This conduit is easy to fabricate, polishes to a high degree, and offers less resistance to moving material than others we might use. **We put Teflon tape on all empty case gravity conveyor curve guides.** Having this completely eliminates case hang-up.

Operating Four Lines

Our present operation has 15,166 sq. ft. for empty container storage, and 4,334 sq. ft. for canning equipment which includes four separate lines.

Line No. 1 consists of a rotary can unscrambler feeding a 12-valve Horix gravity filler; an Angelus seamer to seal the cans, and a Standard-Knapp can booster and packer serves to pack cans in a 4x3x2 arrangement. This line packages our Penn Drake oils and lubricants in refinery sealed round qt. cans at 120 cans/min. This line was one of those relocated for our new operation.

Line No. 2 features rotary unscrambling equipment feeding a new 18-valve Horix filler. We installed a new American Can seamer to seal the cans, and we have a new Burt packer to pack the cans in cases semiautomatically in a 4x6x1, or a 4x3x2 arrangement.

We pack 211 diameter cans on this line at speeds up to 175 cans/min. We use this line for our Gum-out, Fuel Mix, Power Motor Oil and automotive oils.

Our rotary unscrambler is one we devised for this particular application. Crew members dump

cans on a feed table and then push them to the rotary table. This table is reversible, its direction being dependent on which filler (line No. 1 or line No. 2) is operating. This equipment is close coupled to these two fillers and thus serves either of them.

Line No. 3 has a can marking station and 9-valve Horix filler followed by a Swanson capper. On this line we fill 1- and 2-gal. F-style screw-top cans with Gumout, oils and lubricants at a speed of 13 cans/min. We had this equipment previously and simply moved it to its new location.

Line No. 4 uses a 12-valve MRM vacuum filler and a Resina capper. We use manual can dumping and can packing. Half-pt., pt. and qt. F-style or cone-top screw-top cans run through this line at an average rate of 35 cans/min. All this equipment came from our previous packaging facilities.

Just as before, we use five men to operate our canning plant and require three additional men when car unloading takes place while can lines are running. When two canning lines operate simultaneously, we require two additional men.

Current Production Rates

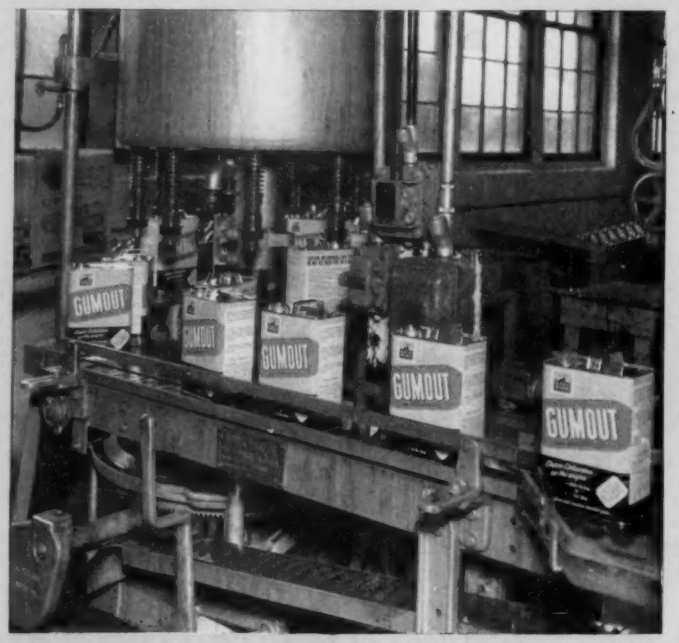
Present average output of this plant over an 8-hr. shift includes 31 pt. and half-pt. F-style cans/min., 11, 1-gal. and 2-gal. F-style cans/min., 105 round pt. cans/min., 153 round half-pt. cans/min., and 102 round qt. cans/min.

We got these increases in productivity at no additional increase in labor. Formerly car unloading took 18 to 40 man-hrs. Presently we are doing it in 12 to 21 man-hrs. Further, our productivity increases have not yet reached their peak. Additional minor improvements in handling and increased operator proficiency will give us further productivity increases.

Install Line Shortcuts

Some of the devices and methods used to enhance the efficiency of our lines deserve special emphasis. For example, we use mir-

CLOSE POSITIONING OF EQUIPMENT without backlogging conveyors is special feature of new canning plant. Unscrambler (center) is close coupled to fillers of lines Nos. 1 and 2 and serves both of them. Electrical interlocking stops various units, permits restarting only at one point—for safety.



USING F-STYLE AS WELL AS ROUND CANS, plant features interchangeability of containers. These range from 11, 1-gal. and 2-gal. F-style cans/min., to 153 round half-pt. cans/min., and 102 round qt. cans/min. Only two lines operate simultaneously, crew members readily move from line to line.

EMPHASIS ON RESHIPPER BOXES dictates adequate conveyor lines to handle them and reversible direction powered conveyors. Although reshippers in foreground are moving away at right, conveyor switch on which they move swings to left to send cases down skate conveyor in foreground.

MAKING USE OF GRAVITY CONVEYORS wherever possible facilitates moving empty and filled cases around plant—as from this case packer. Empty reshippers (behind operator) move down from unscrambling table near wall (rear). Note minimum floor space required for case packing unit.

rors throughout the operation to permit operators to watch seamer blind spots and filler liquid levels.

All canning equipment is gray-blue in color, while all conveyors are painted yellow. Each story of the building is a different color with light pastel shades used for walls along with white ceilings. We have all our piping color-coded.

Visual inventory control charts assure first-in, first-out handling of both empty cans and filled cans in cases.

Where necessary, we have electrically interlocked all equipment so that should one machine or conveyor jam or stop, all equipment in front of it automatically shuts down. When this occurs, the line can be started again only at one point. This provides a safety factor so that no one can endanger some other person (out of sight) when restarting the machinery.

We use lift trucks to move filled cases from the storage area to the shipping docks. All orders are made up in the filled case storage area.

We have all can plant equipment under a preventive maintenance program. We service each unit just as recommended by its manufacturer. All machines are standard, and we have done a minimum of changing them.

One special feature is our use of double air jets close to the filler to blow air into cans. We want this near filling equipment so that the cans travel a minimum distance after being blown clean. Also ahead of the filler, we have a four-prong device that catches upside-down cans so that no such can may enter the filler when not in position to receive a fill.

Housekeeping And Quality

We insist on good housekeeping and require immediate disposing of all spills and rubbish. A continuous program of cleanup and touchup assures that our building and equipment always look neat and clean. We think this promotes good housekeeping habits by our packaging crews.

We have a quality control program to maintain standards of fill, marking, seaming and capping. When each line starts up, we weigh one can from each filler valve. After this, we weigh cans on a time basis depending on line capacity. We check can seams daily, and periodically open and inspect cans for possible contamination.

As our layout shows, only two can lines may operate at once. However, should we need to increase our capacity, we have provided space for installing another gluing machine. This would let three lines operate simultaneously. Likewise, our second floor has enough free floor space to install another four complete canning lines. Further, we could easily conveyorize an adjoining three-story building to provide additional storage.

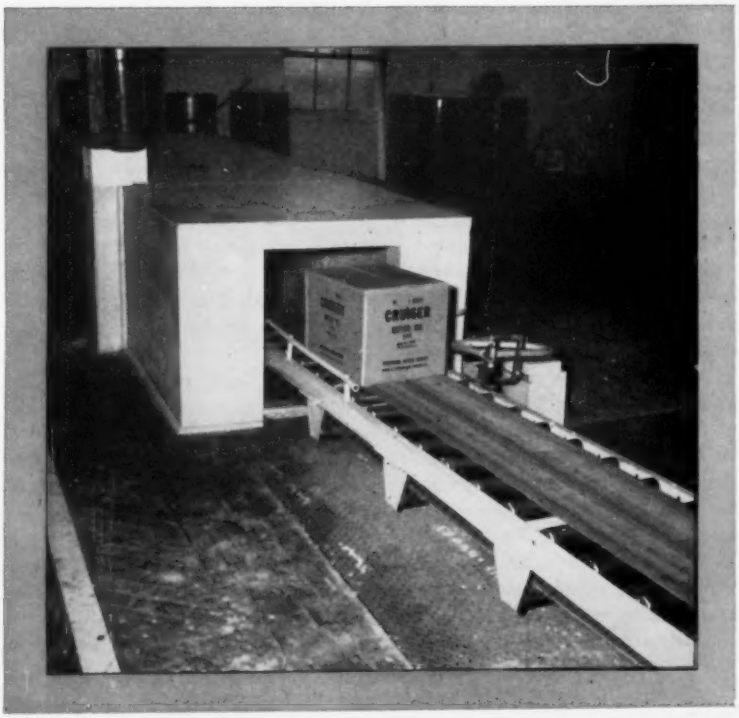
Ignore "Standard" Layout

Experts in canning plant layout may note that we have ignored many principles of standard layout. For example, we have avoided long can conveyors containing many cans in front of fillers, as well as singular can unscrambling, and the like. Rather, we have all lines and equipment in one room and we use reshipper cases exclusively.

With eleven different can sizes to handle on four can lines, an adequate set of can conveyors would be quite expensive. Use of reshipper boxes eliminated the need for these conveyors. Use of these boxes also eliminated our need of case setup equipment and eliminated the labor required to unload, store and set up cases. We find that by providing sufficient can dumping area, it is not necessary to have long can conveyors in front of our filling equipment.

Experience with our present installation finds it efficient, easy to maintain and operate, flexible, and economical. Our own company personnel planned it, and set it up at a cost considerably less than estimated by experts. *(End)*

USE OF RESHIPPER CASES makes unnecessary an elaborate network of can conveyors and twists othewise needed for handling eleven different can sizes. Case packing operation merely requires supply of empty reshippers and flow of filled cans to packer. Reshippers also facilitate can storage.



FILLED, SEALED CASES MOVE BY POWERED CONVEYOR to storage area on floor below. Plant makes extensive use of ½-in. thin wall conduit as conveyor guides and guards. Decline or incline sections over 10° have rough top rubber belts. Those belts used elsewhere have smooth canvas.

Packaging's ultimate test:

STANDARD COSTS

By Stanley B. Henrici,
Head, Industrial Engineering Department,
H. J. Heinz Company, Pittsburgh

You need not be an accountant to grasp and use standard costs, Mr. Henrici asserts. In stressing their value, he tells what they are and what they do in (1) setting standards, (2) recording actual expenditures, (3) comparing actual costs with standard, and (4) calling attention to variances. All this, plus his comments on labor and material use and the interpreting of losses, makes a useful contribution to a packaging man's know-how and know-why.

Packaging engineers are familiar with a wide array of physical tests: Mullen tests, tear tests, drop tests, and many others. They have been presented with ample descriptions of an equally effective type of investigation: the market test.

These tests appraise the behavior of the package in relation to its physical environment and also in relation to its consumer acceptance. Their value and use are well recognized.

But there exists a third type of test which many company managements consider to be of equal if not transcending importance. It is one that is perhaps less widely publicized than the others, yet one that no packaging engineer may safely ignore. It is the cost test.

Cost-Testing Procedure

Although the words "cost test" may often be loosely used to indicate whether or not a package is "dear" or "cheap," they may also have a much more precise meaning.

Specifically, they may refer to a formal, continuing, routinized procedure for determining if a product is being packaged at an agreed-upon optimal cost.

The parallel between physical tests and cost tests is exact. A packager decides that he requires fibreboard with a Mullen reading of, say, 350. He establishes this as a standard. He ascertains the Mullen value of all board received to be sure that it conforms to this standard. Unless it does, the packaging engineer knows that his package will not perform acceptably.

Similarly, a packager decides that the cost of placing his product in a container must be no more than a certain value. He establishes this value as a standard and compares all subsequent actual costs with it. And now, the point that is important to packaging engineers: **Unless the actual costs closely adhere to this standard, the packaging operation is as much a failure as if the container itself fails to protect the product.**

No engineer would tolerate a package which permitted leakage of the contents. And no management will tolerate a packaging process that permits leakage of dollars.

STANDARD PRODUCT COST

Product:	Hand lotion #86	Size:	4 oz.
Container No.:	7822	Carton No.:	1315
Cap No.:	2481	Case No.:	5555
Label No.:	3326		

Cost Element	Reference Sheet	Std. Cost/Case
Direct materials	24	$0.240
Packaging materials	35	0.815
Direct labor	13	0.076
Overhead	100	0.304
Total		$1.435

1 **STANDARD COST SYSTEM SETS UP PREDETERMINED STANDARD** of how much money should be spent on each cost element, such as packaging materials, labor, overhead, and so on, and the packaging engineer should review standard costs to see how much normal loss is expected.

COST COMPARISON SHEET

Date:	January 24, 1959.	No. cases produced:	2250	
Cost-center name:	Packaging	Cost-center No.:	45	

Cost element	Cost		Variance	
	Actual	Standard	Actual	%
Direct materials	$ 600.00	$ 540.00	$ 60.00	11.1
Packaging materials	1850.00	1833.75	16.25	0.9
Direct labor	196.80	171.00	25.80	15.1
Overhead	787.20	684.00	103.20	15.1

2 **VARIANCE—DIFFERENCE BETWEEN ACTUAL AND STANDARD COSTS**—should be studied by the engineer to see if normal loss is being exceeded. If variance shows standard quantities of packaging materials are not being used, he may suspect product is insufficiently protected.

For this reason well-managed companies employ a standard-cost system—an "instrument" of as much importance as the gauges and testers in the laboratory.

Such a system tells management when costs are out of line. Since cost variation is frequently a function of package qualities, it should be of intense interest to the engineer.

The packaging engineer should continuously observe cost performance in the factory. He should know when a packaging operation fails to meet expectations. He should know when it encounters difficulties that eat into profits.

To do this he should know what standard costs are. He should know how standard costs operate.

He need not be an accountant. Others provide the specialized knowledge in that field. But he should be able to interpret the reports that accountants supply. And for this purpose he can easily acquire at least a handshaking acquaintance with standard costs.

What Standard Costs Do

A standard cost system is essentially simple and obvious. And it is useful. It does four things:

1. **Sets up a predetermined standard** of how much money should be spent on each element of cost, such as packaging materials and labor, among others. (See Fig. 1.)
2. **Records** how much money is actually spent.
3. **Compares** actual costs with standard. The difference between the two is called a variance. (See Fig. 2.)
4. **Calls attention** to unduly large variances and reveals reasons for their occurrence. Large variances indicate the need for correction — often action that the packaging engineer should initiate.

What "Standard" Means

Usually, before a new product is put into production, its expected cost is estimated. Should such an estimate be used as a standard? The answer depends on how the estimate was made, for there are estimates and estimates.

Some estimates ought never to be used as a standard, for they do not portray what the cost really should be. Often the estimator includes large safety factors, just to play safe. He knows that profit margins and selling prices may be based on his figures and he leaves a little leeway for unforeseen circumstances.

The standard-cost system, however, is a device for forcing costs down. Factory supervisors, for example, are encouraged to reduce variances and to run as close to standard as possible. The standard should include allowance for necessary and unavoidable losses, but in general it should exclude safety factors. It may often be tighter than a pre-production estimate.

Again, estimates made in advance of production and sale may base themselves on a hypothetical volume of production. They may predicate the use of still-untried equipment. They may contemplate the use of containers on which competitive factors may later reduce prices. They may postulate material yields yet to be proved in practice. Thus, they are often too loose and uncertain to be used as a standard of performance.

Standard costs, on the other hand, may be revised once production is under way. They are based on engineering study. The study views realities. It discerns what can be done when things are done best. Excluding losses and inefficiencies that should not occur, it provides for those that unavoidably must, and discloses what the operating costs should be. It represents efficient, but attainable, performance.

(*Turn page*)

Stanley B. Henrici is a graduate of the Carnegie Institute of Technology with a B.S. degree in management engineering. Before joining Heinz in 1947, he was assistant chief plant industrial enineer for a large steel company. Author of a college textbook, *Standard Costs for Manufacturing*, Mr. Henrici is a fellow of the Society for Advancement of Management, a member of the National Association of Accountants, and a registered professional engineer.

Standard Product Cost

Usually a standard cost is figured for each product. It is recorded on a standard product-cost sheet as shown in Fig. 1. This simplified example might be drawn from a company that purchases a raw material in bulk and packages it for resale.

It will be observed that the sheet shows how much should be spent per unit for direct materials, packaging materials, direct labor, and overhead. Later, we shall see how these standards are developed and what the figures should mean to packaging men.

Overhead in this example is shown as a lump figure. In recent years, mechanization has had the effect of reducing direct labor costs while greatly adding to overhead. As a result, overhead is often much greater than labor and the need for controlling it is more obvious. Hence, some companies break it down and show its components separately, as in Fig. 3.

Here separate cost values are shown for indirect labor, maintenance, utilities, supplies, supervision and clerical expense, and general factory management. The effect is to spotlight each of these elements when comparing it with actual values.

Cost Performance

Here is how the standards are put to use as a cost test:

The cost department keeps track of how much money, in a given period, is spent on labor, materials, and each of the other cost classifications. It also keeps track of how many units of production (packages, in our example) are turned out.

Then it multiplies the number of units produced by the standard cost per unit for each cost element. This gives a total standard cost for the month. If the actual cost is greater than standard—if there is an unfavorable variance—ten reasons for this occurrence must be adduced.

For example, suppose that 2,250 cases are turned out in a given

STANDARD COSTS ARE INVALUABLE TO THE PACKAGING ENGINEER:

They enable him to do his job better, both in planning and in follow-up.
They provide useful information for forecasting costs associated with new packages.
They tell him whether his package is performing as it should in the factory.

STANDARD PRODUCT COST

Product: Hand lotion #86 — Size: 4 oz.
Container No.: 7822
Cap No.: 2481 — Carton No.: 1315
Label No.: 3326 — Case No.: 5555

Cost Element	Reference Sheet	Std. Cost/Case
Direct materials	24	$0.240
Packaging materials	35	0.815
Direct labor	13	0.076
Indirect labor	14	0.022
Supervising & clerical	16	0.013
Maintenance labor	18	0.008
Maintenance materials	21	0.007
Utilities	29	0.003
Supplies	31	0.005
General factory expense	50	0.246
Total		$1.435

3 **MECHANIZATION HAS HAD THE EFFECT** recently of reducing direct labor costs while greatly adding to overhead. Result: Overhead is often much greater than labor, and need for controlling it is more obvious, hence some companies break overhead down and show its components separately. Effect is to spotlight each element of overhead when comparing it with actual values.

STANDARD LABOR COST

Product: Hand lotion #86 — Sheet No. 13
Cost-center name: Packaging No. 45
Subaccount name: Direct labor No. 301

Job — Standard Crew	Hr./Shift	Hourly Rate	Cost/Shift
Glass dumper	8	$1.80	$14.40
Filling machine attendant	8	1.80	14.40
Capper attendant	8	1.80	14.40
Labeling machine attendant	8	2.00	16.00
Inspector	8	1.80	14.40
Cellulose assembler	40	1.60	64.00
Cartoner attendant	8	2.00	16.00
Packer	8	1.60	12.80
Palletizer	8	2.00	16.00
Total			$182.40

Standard daily production:	2400 cases
Standard daily hours:	8.0
Standard direct labor cost/case:	$0.076
Standard direct labor cost/std. hr.:	$22.80

4 **STANDARD DIRECT LABOR COST SHEET EXHIBITS** jobs performed, number of people needed, pay rates, production rate expected at standard performance, and standard cost per product unit, or per standard hour. If variance occurs in total standard dollars allowed for labor, packaging man should investigate to see if redesigning package might reduce variance.

day. Suppose also that the actual cost of direct material on the packaging line was $600.

The standard cost of direct material is 2,250 units times $0.240 per unit (see Fig. 1), or $540. Since the actual cost was greater than this, something must have gone wrong. Some of the possible sources for investigation are described later in this article.

The results of the "cost test" are usually embodied in a report showing a detailed comparison between actual and standard costs. Such reports are often prepared daily and nearly always at least monthly.

A factory having many products will issue a report for each department, often one for each operation.

An example is shown in Fig. 2. Such reports are prepared primarily for the production supervisors. The packaging engineer may also wish to have access to them.

Operational Standard Costs

The example given is for a single-product factory. Frequently, a factory will package many products on the same line. Thus, a distillery may fill a number of different whiskeys in a week on a given filling line. Each will have its own package and ingredient, but the other costs, such as labor, may not change from one variety to the next.

In such cases, the accounting department may prefer to express its standard costs not only as "so much per unit of product," but also as "so much per standard hour" earned on the line. Such hourly standard costs are established for each operation.

Thus, if standard performance is 300 dozen per hour, then on a day in which the line turned out 2,100 dozen, 7 standard hours would have been earned.

The total standard cost for the day is 7 standard hours times the standard cost per standard hour for each cost element.

This is just another way of arriving at the total standard cost that is to be compared with actual.

Packaging engineers may find their company uses either method.

Using Standard Costs

Packaging men interested in the success of their brain-children closely follow packaging cost performance.

If the periodic variance reports reveal a loss on any product or any operation, they want to know why. Is the package responsible? Is the packaging equipment at fault? Is the labor methodology associated with this package unduly complex, changeable, or difficult?

The packaging engineer is always an explorer breaking his way into new territory. Questions like those above are like compass checks that tell him where he is going. They help to direct the course of his travels. They profoundly influence his choice of materials, of machines, and of methods. And so he frequently reviews operating variances to see where quality control will help to reduce costs.

Changing the metaphor, the variances are like the "blips" on the screen that signal the presence of the unusual.

But the engineer must know how to interpret these blips. Let us examine some of them in detail. That is, let us see what can be learned from a study of variances on specific elements of cost.

Direct Materials

Typically we think of direct materials as those which go into the product in amounts sufficiently large to be measured and assigned a unit cost. We expect the cost of direct materials to be charged to the department in which the product is made.

Nevertheless, direct materials can also be lost in packaging operations. Any abnormal amount of this loss will then appear as a variance in the department where packaging occurs.

Such losses may be due to various reasons, all of interest to the packaging man.

1. Damage or destruction of product. For example, in packaging delicate parts or instruments, the mere act of handling may result in damage in placing them in the package. They may be dropped, distorted, defaced, or marred, if it is difficult to put them in the case or to assemble the protective elements around them.

Again, with large appliances or machines, a case or crate that requires awkward handling of container or contents may introduce the possibility of product loss.

A good package safeguards the product during, as well as after, the act of packaging. It does not create opportunities for employee carelessness.

Ordinarily losses of this sort would not be allowed for in the standard cost. Their occurrence on the variance report therefore signals the need for engineering action.

2. Loss in yield of product. Filling operations are the common example of this loss.

The standard cost usually includes an allowance for a certain amount of unavoidable product wastage. Not everything that is directed at the filling machine will get into the container. Some will be left in lines and hoppers at the end of the day. Some will splash or dust out. Some will be used during trial runs or setup. Some will be consumed in quality checks.

The packaging man is interested in losses beyond these. His package or the machines that must be used to fill and close it may be causing expensive problems. For example:

a. Non-uniformity of containers. Containers that must be filled to a certain level should have uniform volume, or some will require too much contents.

b. Fragility of containers. Containers so designed that they break easily, such as light-walled, odd-shaped glassware, create an obvious problem.

c. Unstable containers. Bottles or cartons that tip over easily on the production line spill product that cannot be recovered.

d. Unstandardized containers. Where many different sizes and shapes of package must be run on

the same production line, the frequent changeovers and setups preclude efficient operation. Direct materials will be lost every time a size change occurs.

e. Complicated containers. Product loss can be anticipated when containers are so complicated or unusual that they require either many manual operations or intricate special purpose equipment for their filling.

By studying variances of actual cost from standard, the engineer can see if his packages conserve direct materials.

Packaging Materials

A standard cost for packaging materials will usually show how many units of packaging should be used per unit of finished product.

Ideally, for example, we would expect one fibreboard case to be used for each refrigerator shipped, one cap for each tube of toothpaste, one can for each quart of oil, one card for each display of lipstick.

In practice, of course, such perfection is unlikely. Some provision for loss must be made in the standard. Its magnitude depends on the container itself and must be determined by careful study.

In some highly repetitive, well-engineered filling lines the container loss has been reduced to less than one in a million, too small to account for costwise. On some cartoning operations, it may be as high as one in a hundred.

The packaging engineer should review the standard to see how much normal loss is expected. And he should study variances to see if this amount is being exceeded in any areas.

At times, too, he will want to be sure that too little material is not being used. Where a variance indicates that less than the standard quantity of wrappers or crating lumber is being employed, he may suspect that the product is being insufficiently protected.

Direct Labor

In setting a standard cost for direct labor, the accountant usually prepares a sheet listing labor crews and rates of production. An example is shown in Fig. 4.

It will be seen that this form exhibits:

1. **Jobs** performed.
2. **Number** of people needed.
3. **Rates** of pay.
4. **Amount** of production expected at standard performance.
5. **Standard** cost per unit of product or per standard hour.

For periodic reports, the latter figures are multiplied by output to find the total standard dollars allowed for labor in a given period. This figure is then compared with the actual dollars. If a variance occurs, the packaging man should ask himself:

1. Are more people being used in practice than should be?
2. Are higher-than-standard labor rates being paid because the work demands personnel in a higher job class?
3. Is output lower than it should be?

Each of these occurrences may be due to difficulties that the engineer can correct.

It might be thought that he has little control over output. Yet his design of the package may have everything to do with how fast production can proceed without interruption.

Nonuniformity, complexity, or fragility of the package for example—all influence productive rates.

On the other hand, it might be asserted that productivity has much to do with machine performance, and that the manufacturing division, rather than the packaging man, selects the machines.

Yet it is also true in many cases that the package design automatically determines the equipment to be used in the factory. The choice of a particular bottle cap, a specific style of carton, a brand of carrypack, often dictate the equipment that must do the work. Does this equipment consistently operate at good rates of speed? Does it incur frequent stoppages for adjustment? Does it require extra operators? Does it turn out so many defective packs as to require added inspectors?

Standard cost records quickly answer such questions.

Why Standard Costs?

The benefit of a standard-cost system is that it reduces everything to one common denominator: *dollars.*

An engineer may, it is true, learn much by following a multitude of reports on various aspects of packaging. He may accumulate reports on yield, container usage, machine output, labor efficiency.

But it takes time to go through all these. In the press of other duties, they tend to be laid aside. And each one has a different basis. And there is no true distinction between what is significant and what is not. Is a container loss of 0.02 per cent good or bad?

Putting everything in terms of dollars immediately focuses attention on only those losses that are of importance to company profits.

And the variance method of accounting relieves the engineer of the laborious study of voluminous reports in order to find out just where trouble lies. It shows him immediately. Operating on the principle of exceptions, it saves his time.

Summary

Packaging engineers must be familiar with three fields of testing:

1. **Physical tests.** To be sure that packages provide both protection and convenience of use.
2. **Market tests.** To be sure that packages attract and satisfy the consumer.
3. **Cost tests.** To be sure that packages conform to company spending requirements.

For the latter purpose, standard costs are invaluable. Most accounting departments provide them. They are able, and anxious, to explain them to the packaging man and make them available for his use.

Standard costs enable him to do his job better, both in planning and in follow-up. They provide useful information for forecasting cost associated with new packages. They tell him whether his package is performing as it should in the factory—and whether the factory is doing the job it should, costwise, with his package. (*End*)

Just Between You and Your Customer

Faith in the quality of a product will bring your customers back again and again. In keeping that faith, your packages must play a vital role.

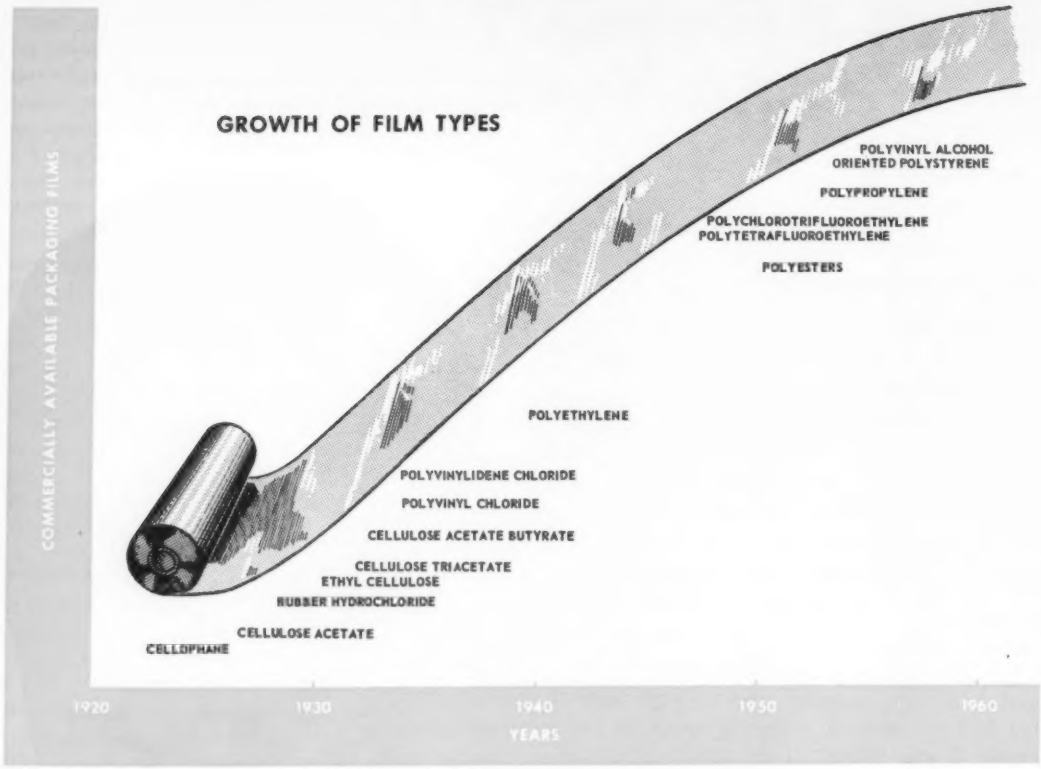
Product protection that never lets the customer down is Riegel's business. We offer you a choice of more than 600 different materials... designed for protection first... with equal stress on low cost, high packaging speed, and eye-catching appearance. Papers, foils, films and combinations... waxed, coated, printed, or plain... tailor-made to your needs. Riegel research and manufacturing versatility can help your sales. For technical advice or samples, write to Riegel Paper Corporation, 260 Madison Avenue, New York 16.

Kraft protects its delicately flavored Grated Parmesan Cheese and Herb Spice Mix in pouches made from a reverse printed Riegel Glassine...with a polyethylene extrusion over the ink for high speed sealing and forming on Bartelt equipment.

Riegel

PROTECTIVE PACKAGING MATERIALS

For more information circle No. 234 on Reader Service Card, Page 107



Tomorrow's films challenge today's research

By Bailey Bennett and C. W. Cooper,
Battelle Memorial Institute, Columbus, Ohio

More intensive probing into the nature and fine structure of packaging films as they relate to needed properties will pay handsome dividends. This statement is neither an indictment of past work well done nor a short-changing of present efforts. It is simply a firm belief in the necessity for additional basic research designed to eventually fill various needs of the packaging industry.

Since the first commercially important packaging film, cellophane, made its debut 35 years ago, film producers have brought out one film after another to meet packagers' needs. Each new film was an improvement in some respects, over its predecessors—but invariably possessed some limitation that excluded it from numerous uses.

Film converters have attempted to overcome the limitations of single packaging films by combining two or more of them into laminates. Their success has been outstanding at times, but not without increasing substantially the cost of finished products. At other times, they have been limited by complicated fabrication problems.

Films Of Known Polymers

Both groups, producers and converters of packaging films, have expended huge sums of time and money in making the present array of products available to consumers. However, their approaches have been mostly empirical, i.e., the major part of their research and development effort has been to investigate the film-forming properties and inherent attributes of known polymers. **Only when newly available polymers could not be produced in film form by well-known techniques did they turn to more basic research.**

It is our contention that this necessary diversion into basic research was a drop in the bucket compared with the total research and development effort. Further, we believe that basic research must form a larger percentage of the total effort as the problems become tougher and the return from empirical studies becomes more mar-

ginal. It is only through long-range, basic research that the ultimate goal of a "workhorse," general-purpose film will be realized.

Development of single films by individual producers and the combining by converters of the properties of several films in one material will not meet today's and tomorrow's demands, Messrs. Bennett and Cooper say. In support of their plea for more research, they offer as a challenge the properties of an ideal "work horse" film.

ORIGIN OF A RESEARCH PATTERN

A research pattern originated with the early development of the first commercially important film —regenerated cellulose, better known as cellophane. Its growth over a period of years serves to illustrate the origin of a pattern and to give some indication of past trends of research in the general field of packaging films.

The rapid development of most areas of technology is almost always the result of an early identification of a discovery with rather obvious end-item applications. Cellophane was no exception to this rule and such applications were undoubtedly anticipated following the early work of the Swiss Brandenberger in his development of a continuous process for the regeneration of cellulose sheeting from cellulose xanthate.

Brandenberger's process was patented in 1925 (*1*). It was, of course, an outgrowth of the pioneering work with viscose and viscose films conducted by Cross, Bevan, and Beadle in England (*5*), and by C. H. Stearn (*7*) in this country toward the end of the nineteenth century. The early appearance of regenerated cellulose films was, therefore, a prime mover in the mushrooming growth of the present 650 million pound plus film industry.

Long Hold On Field

The recognized potential of a high-volume, relatively low-cost, transparent, nonporous film accelerated a search for improvements, as well as for wholly new products. However, seldom has one product, which at first glance appears to be a novelty, dominated a field for as long a time as has cellophane. In 1923, the Du Pont Cellophane Company (now a part of the film department of E. I. du Pont de Nemours and Company, Inc.) acquired American patent rights to the Brandenberger process. Manufacture began at Buffalo, New York, early in 1924. Since then, production has expanded to other locations, and other large organizations (both foreign and domestic) have entered the field.

Cellophane as originally produced could not long have maintained its position, in spite of its favorable cost, without the existence of an expanding research program which matched the product's growth. The original plain regenerated cellulose sheet was deficient in such properties as dimensional stability, permanent flexibility and strength, and inherent moistureproofness. Eventually, under the pressure of necessity, modifications were made resulting in improvements in some of these properties.

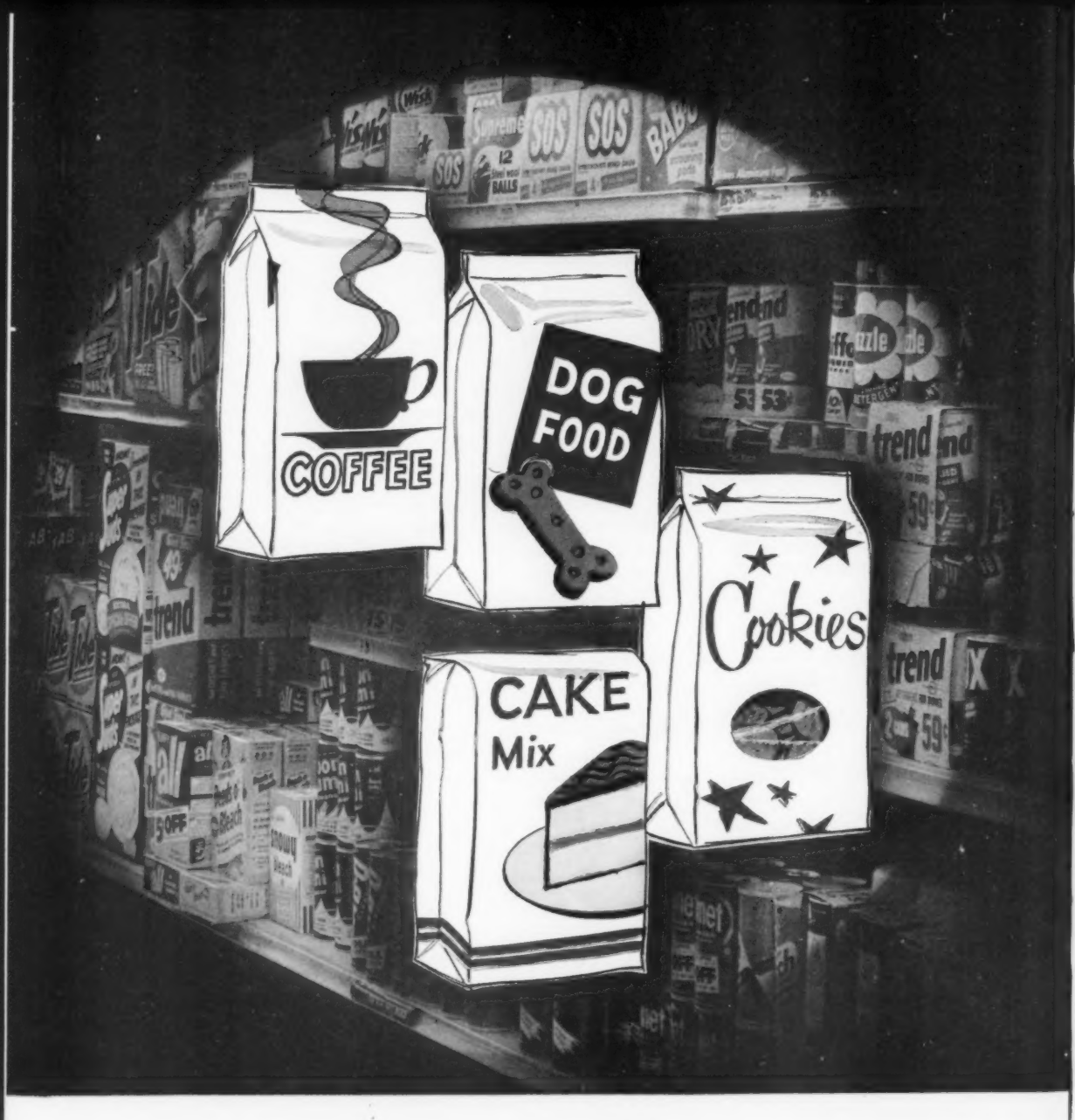
A method of moistureproofing the film was invented by Charch and Prindle in 1926 (*3*). The base sheet was coated with a mixture of nitrocellulose, resin, plasticizer, and hydrocarbon wax. Similar coatings were later developed that were heat sealable, thus offering improved handling in packaging operations—especially in adaptation to high-speed machine operations.

Moisture Problem Solved

In a further development, Charch and Bateman (*2*) anchored these coatings to the base film to resist prolonged exposure to water or moist products. Because the moistureproofness of the coatings was dependent upon a wax monolayer, they were not sufficiently resistant to damage and the resultant loss

WANTED — A WORKHORSE FILM!

- **COST—**
  $0.020-0.025/1,000 sq. in.
- **TRANSPARENCY—**
  zero haze
- **GAS TRANSMISSION—**
  O_2: 0.50-0.55 c.c./100 sq. in./24 hr:/ 0.001 in. at 77°F. and 760mm. Hg
  CO_2: 2.0-2.5
- **WATER VAPOR TRANSMISSION—**
  0.05-0.1 gm./100 sq. in./24 hr./0.001 in. at 100°F. and 90% R.H.
- **TENSILE STRENGTH—**
  15,000-20,000 lb./sq. in.
- **DIMENSIONAL STABILITY—**
  <0.3% from 0°-212°F.
- **HEAT SEALING RANGE—**
  300°-400°F.



Whiter, Brighter NIBROC® WHITE "Coffee Bag" makes your products pop out

There's brilliant new high brightness and whiteness in Nibroc White "Coffee Bag"—that puts your product under a spotlight of attention-getting radiance.

This whiter, brighter Nibroc White sings out your brand name, makes sparks fly in your color copy, halts customers like a stoplight. They instinctively reach for it.

Nibroc White prints cleaner, colors are crisper. It flows through forming perfectly—fills easily and closes securely.

Write today for samples and complete information on brighter Nibroc White, super calendered and/or embossed. Address Paper Sales Division, Dept. RK-11, Boston office.

NIBROC® WHITE "Coffee Bag"

...brighter than ever

Another Quality Product of BROWN COMPANY *General Sales Office:* 150 Causeway St., Boston 14, Mass. *Mills:* Berlin and Gorham, N.H.

of a portion of this property. This last difficulty was overcome within approximately the last ten years by the application of inherently moistureproof coatings based on copolymers of vinylidene chloride.

This very brief sketch of the cellophane story serves to illustrate the origin of a research pattern. **Simply stated, a relatively low-cost, available, polymeric material was produced in film form which was adapted to consuming packagers' needs through surface modifications.** That this formula was successful is shown by the production of cellophane which was estimated to be about 145 million pounds as early as 1948. By 1956, production had reached 400 million pounds and still there is no evidence that it is leveling off.

THE PRODUCERS' APPROACH

The plastic film producers' approach to meeting the growing demands of the packaging industry has been to push an unending search for new, improved films. Practically every known polymer has been evaluated as potential raw material. Literally scores of promising films have been made experimentally and a substantial number of them have survived the tortuous path from test tube to full-scale commercial production.

The commercial success of cellophane and the research pattern that was a major factor in its realization, furnished the impetus for the growth of the producers' approach. Various cellophane derivatives and other thermoplastic materials were produced in film form and became competitive with cellophane. The general trend was to make film from everything possible, measure the film's properties, and then attempt to tie the most desirable of these properties to packagers' needs.

Films Make Their Appearance

One of the early films was cellulose acetate. Its strength, dimensional stability, protective properties, and cost limited its packaging applications largely to decorative uses. Other films that have appeared in rapid succession include rubber hydrochloride, ethyl cellulose, cellulose triacetate, cellulose acetate butyrate, vinyl chloride polymers and copolymers, polyvinylidene chloride, polyethylene, polyesters, polytetrafluoroethylene, polychlorotrifluoroethylene, polypropylene, oriented styrene, and polyvinyl alcohol.

This impressive list, which includes only those films to reach large-scale commercial production, reflects the magnitude of the film producers' efforts to develop novel packaging materials. It is to be remembered that, for each film to reach commercial production, there are scores that never got out of the laboratory. (*Turn page*)

Bailey Bennett was graduated from Ohio State University with B.S. and M.S. degrees. He became a research associate at Ohio State and spent several years conducting research on synthetic polymers. At Battelle, he has taken part in numerous studies relating to packaging films. Typical of these studies are the development of films for packaging chemicals and pharmaceuticals, modification of films by radiation, and basic research into the permeability of plastic films. An assistant consultant in the rubber and plastics division at Battelle, he continues to be active in film research.

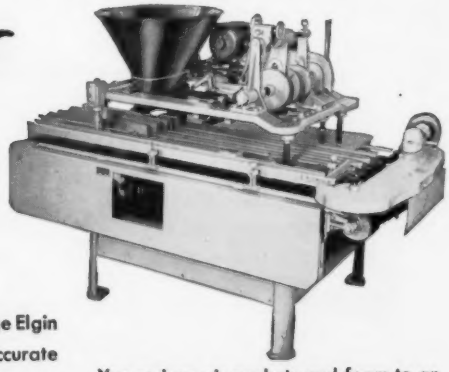
C. W. Cooper is a graduate of the University of Buffalo with an A.B. degree in chemistry. Following his graduation, he became a research chemist at Du Pont where he participated in research on regenerated cellulose. Later, at Battelle, he worked on a number of problems relating to plastic packaging films, including surface coatings, chemical modification, adhesives, and research into the fine structure of films. At present, he is an assistant chief in Battelle's rubber and plastics division where he continues to take part in packaging film research, both basic and applied.

VERSATILE 4 VALVE FILLER

Elgin
EARNS ITS WAY

"QUAD"

For Liquid and Viscous Products



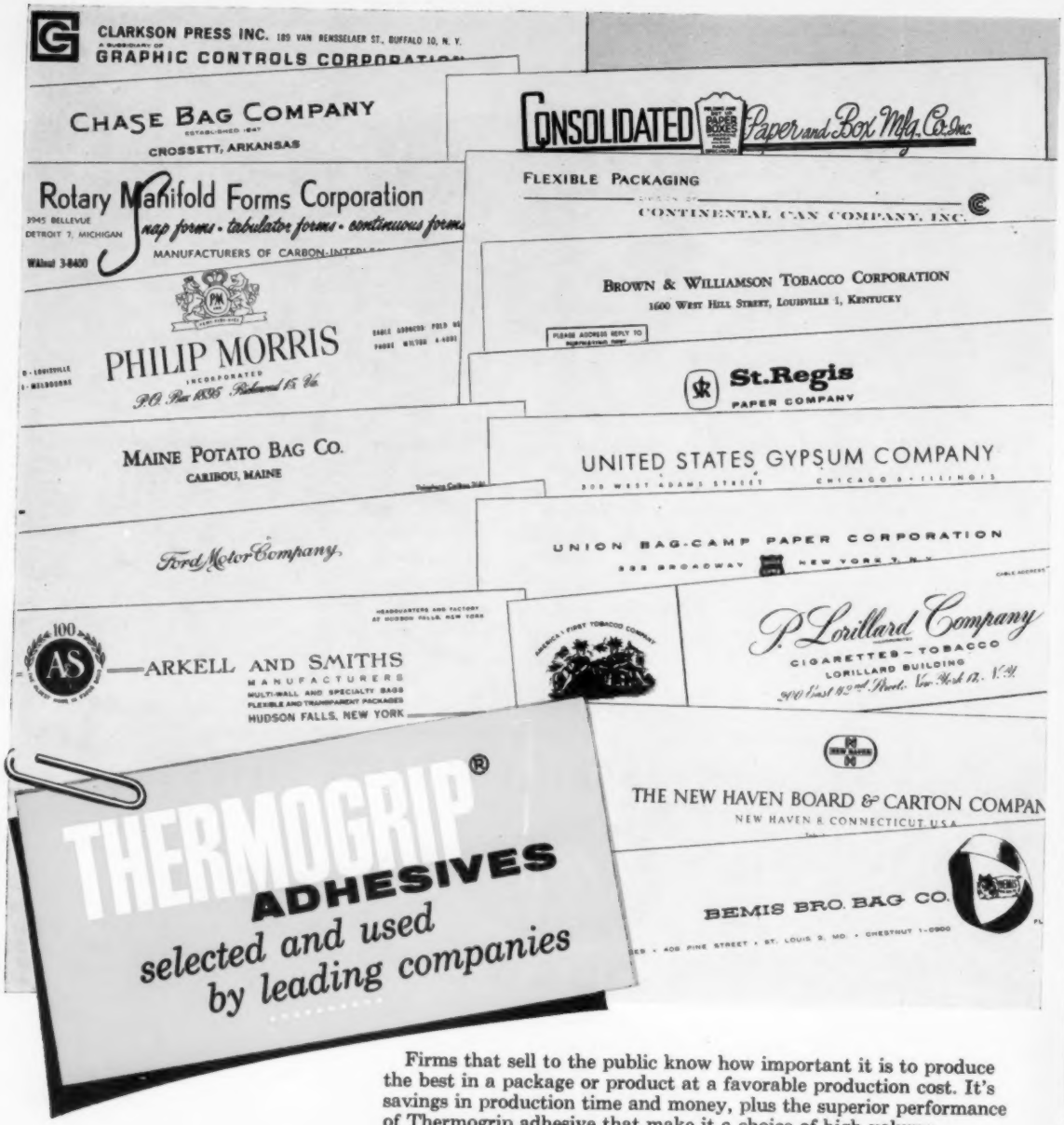
Ideal for glass or tin containers, the Elgin "Quad" is the highspeed, accurate producer—easily and quickly adjusted for fill, and speed! The piston stroke which governs fill in all 4 valves is easily controlled by a single micrometer screw adjusting handle. The upper table assembly is quickly adapted to all container heights by a single hand wheel.

You reduce air pockets and foam to an absolute minimum with the Elgin "Quad" bottom fill. The "Quad" is a proven success with light or heavy packs—is easy to clean—and earns its versatile way with trouble-free deliveries.

Write for complete literature

PACKAGING MACHINERY MANUFACTURERS INSTITUTE PMMI MEMBER

ELGIN MANUFACTURING COMPANY
200 Brook Street, Elgin 1, Illinois



Firms that sell to the public know how important it is to produce the best in a package or product at a favorable production cost. It's savings in production time and money, plus the superior performance of Thermogrip adhesive that make it a choice of high volume, quality conscious firms.

With Thermogrip adhesives, machine speeds can be increased to maximum, operations cut and production simplified. Often money saved through production "knowmanship" can be put into package showmanship.

Best of all, only United has a choice of SIX basic Thermogrip applicators backed by more than 50-years' experience in designing dependable, precision production machinery — and in formulating special adhesives through its subsidiary, BB Chemical Company. This combination of production machinery skill and adhesive know-how is your assurance that Thermogrip adhesives are your very best investment. Call or write us today about your problem.

See us at the

NEW YORK COLISEUM

PACKAGING MACHINERY MANUFACTURERS INSTITUTE SHOW

NOV. 17 thru 20, 1959

BOOTH 600

United

UNITED SHOE MACHINERY CORPORATION

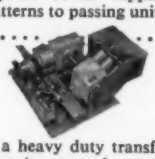
140 Federal Street, Boston, Mass. • Liberty 2-9100

For more information circle No. 237 on Reader Service Card, Page 107

six THERMOGRIP adhesive applicators solve widest range of problems . . .

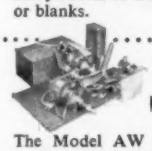
CARTON CLOSING

Model CW transfer wheel type is small, compact, adaptable to many parent machines processing at rates approximating 100 units per minute. Operates at any angle — even upside down. Applies various adhesive patterns to passing units.



STRAIGHT LINE GLUING

The Model BW is a heavy duty transfer wheel type with capacity to apply nearly 100,000 feet of average width seam per hour. Can apply continuous or broken line patterns to individually passing items or blanks.



CARTON PRODUCTION

The Model AW wheel type applicator provides intermediate adhesive volumes. Applies up to a quarter pound of hard working, sure sticking hot melt adhesive per minute. Operates inverted or on vertical surfaces.

BAG MAKING

The Model AN for continuous seams applies up to 35,000 feet of ¼ inch seam per hour. With different nozzles a variety of seam combinations and locations can be produced.

FABRIC BONDING

The Model BN unit more than doubles adhesive capacity of Model AN. Good for rough materials, fabrics, burlap, as well as heavy papers.

WAX PAPER OR FOIL STICKING

Small bags, business forms, or continuous tapes are a specialty of the CN unit.

United

UNITED SHOE MACHINERY CORPORATION
140 Federal Street, Boston, Mass.
Liberty 2-9100

Circle No. 237 on Card, Page 107

Each Film Used By Itself

This array of packaging films illustrates one pronounced difference between the approach of the plastic film producers and that of the earlier developers of cellophane. Where packagers' needs were met by the makers of cellophane through various surface modifications (thus producing, in actuality, multicomponent or laminated structures), the competitors relied on exploiting the inherent properties of new, single films. However, they soon experienced what the makers of cellophane had found earlier, namely, **that no single film or modification of one will embody all of the properties desired by all of the potential users.**

The limitation of cellulose acetate film to decorative applications has already been mentioned. Each of the other films, particularly in its early stages of development, was excluded from some uses by one or more of its inherent properties. Thus, high cost, inclusion of a volatile component, excessive haziness, dimensional instability, sealing problems, inability to be run on conventional packaging machinery, etc., were typical of the problems encountered with various single films, that served to limit their use to certain specific applications. **At the same time, these were the very problems that spurred the search for new and improved films.**

Evolving A New Film

In many cases, significant progress has been made in overcoming or minimizing some of the problems by research into, and adoption of, better methods of production. Process control during production operations plays a vital role in the properties of finished packaging films. This being the case, packaging film producers have concentrated a substantial portion of their research on methods of processing.

Such research often boils down to a careful study of a number of processing variables and the selection of an optimum combination. As with the search for new films, the approaches used in the improvement of processing have often been largely empirical, since the chief objective was the turning out of products.

In coming up with a new film having properties that are attractive to the packaging industry, more producers may be forced to divert a portion of their research into areas that are more basic in nature. For example, the commercial development of packaging films like polyvinylidene chloride, the polyesters, and more recently, polystyrene, could not have been realized without the pursuit of a certain amount of basic research. These films derive their physical strength properties largely from orientation phenomena, presenting a situation where molecular arrangement becomes of prime importance.

When Is Research Needed?

The producers of packaging films have completed some excellent studies into the how and why of various factors relating to plastic films. However, it is our contention that such studies were generally a necessary diversion of a relatively small portion of the giant total effort put into the development of new films.

In other words, when a newly available plastic could not be prepared in film form by well-known techniques, completely new processes of fabrication had to be devised. In developing new technology, for example, the need for, and methods of, orienting film in two directions simultaneously, a certain amount of basic research became necessary. The role of orientation, the degree and direction of orientation, and the relationship of these factors to physical properties of the finished film had to be investigated. **Thus, the film producers turned to basic research when strictly empirical approaches failed to give the desired results.**

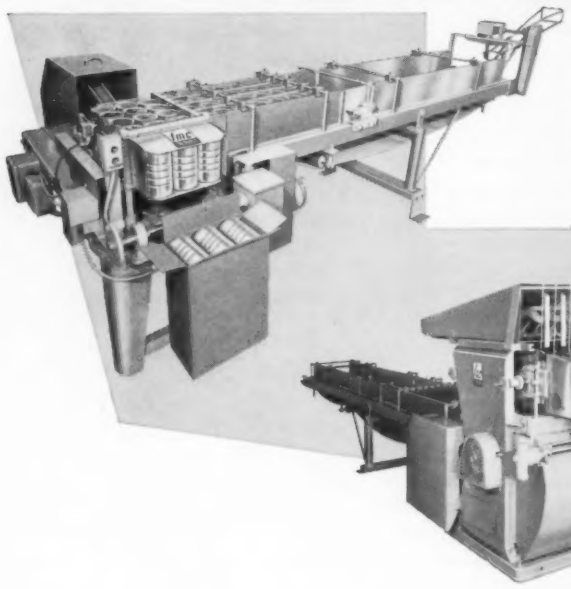
CONVERTERS EXTEND THE PATTERN

In trying to meet, or to anticipate, the needs of the packaging

fmc ---------- CASING EQUIPMENT

for Packages or Cans —Top or End-Opening Cases

FAST • AUTOMATIC • GENTLE • MONEY-SAVING



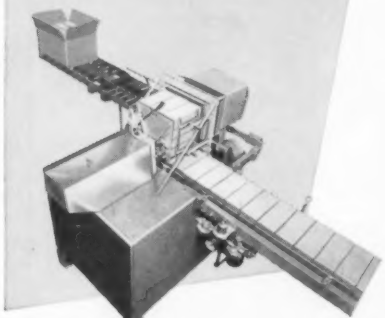
FMC NON-SHOCK END-OPEN CASER

Due to its smaller flaps, end-opening shipping cases are easier to feed and quicker to position. Saves labor and saves up to 15% in fibre, too. Handles 1200 cases per hour or more, limited only by speed of operator. Eliminates rolling-can-impact. Capable of handling single tier patterns of any can size.

FMC MODEL 3 NON-SHOCK TOP-OPEN CASER

For continuous, high-speed lines where use of a top opening case is desired. Empty carton placed over loading chute activates lowerator arm and tiered can pusher arms. Automatic operation completes the cycle at speeds up to 1200 cases per hour. Handles specific can sizes and combinations from 202x308 packed 6x8, to 603x700 packed 2x3.

Whatever your problem—can labelling, casing, sealing—FMC packaging engineers welcome the opportunity of reviewing them with you. If your product is packaged in a box, carton, can, or other rigid or semi-rigid container, or if the product itself takes a rigid shape, chances are you can case it better for less with FMC precision-engineered equipment. Send full details for prompt reply, or ask your FMC representative to call. There's no obligation, of course.



"SURE-WAY"* PACKAGE CASER

Reduces operator man-hours alone up to 70 and 80%. The compact "Sure-Way" is near-human in gentleness to packages, overwraps and labels. Built in a number of styles for end or top opening cases at speeds up to 14,500 packages per hour or more. Handles products from cosmetics to cereals; machine parts to frozen foods.

*Exclusive Distributors: Food Machinery and Chemical Corporation

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Canning Machinery Division

General Sales Offices:

WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

film users, film converters have adopted the approach of combining two or more films into a single structure. This approach of tailoring products to fill the customers' needs has met with varying degrees of success. In some instances, the results have been outstanding, for example, the development of polyethylene-coated polyester film that is widely used for "boil-in-the-bag" food packaging. In other cases, fabrication problems or inherent properties of the single films have prevented the attainment of desired goals.

Instead of a continual search for new single films, why not pyramid the desirable properties of two or more existing products by putting them together into a multicomponent structure? Such an approach is really an extension of the pattern that originated with cellophane. However, the makers of cellophane stuck with one base film while the converters of plastic films have used a variety of starting materials.

Problems In Combining

In theory, the large number of single films available and their widely varying properties hold promise of meeting practically any user's requirements by proper combination. In practice, it isn't quite that simple. The desired combination, to ever become a commercial success, must be both technically and economically feasible.

Technically, the converters are limited chiefly by fabrication problems while their products are limited by the nonadditive nature of the properties of the individual components in a laminated structure. The cost of a laminate will always be relatively high, but may be justified by the packaging industry on a service basis.

Fabrication problems arise when the two or more components that are to be combined possess such widely different properties that they cannot be handled simultaneously on production equipment. For example, if polyethylene is to be extruded onto another base film, the latter must be stable at the

Just type a stencil...
and "touch" your cartons

Fastest, easiest way to address your multiple carton shipments

Weber "Touch-Stenciling" replaces labels and stencils boards. It's fast, neat and systematic

Want a quick, easy way to address shipping cartons? Then try this new Weber "Touch-Stenciling" system —means no more stencilboards, rubber stamps or label typing.

Shipping cartons, pre-printed with "Ship-To" label frames, are addressed by simply printing the customer's name and address within the frames with a Web-O-Print hand duplicator. It prints from a stencil that you can type or handwrite. Just a "touch" on the carton leaves a clear, sharp, permanent print.

With a smooth, one-hand motion 40 to 50 cartons can be addressed in a minute. After the shipment is addressed the stencil is thrown away, saving filing time and space.

Weber stencils can be prepared as part of your order-invoice writing procedure to save time and eliminate shipping errors. They can be cut as a by-product of forms typing on manual or electric typewriters, automatic accounting machines and other modern office equipment.

FREE BOOKLET TELLS SAVINGS STORY!
Write today for new booklet—How to Save Time and Money with "Assembly Line" Shipment Addressing.

Weber
MARKING SYSTEMS
Sales and Service in all principal cities

WEBER MARKING SYSTEMS, INC.
Dept. 21-K
Weber Industrial Park
Mount Prospect, Illinois

Send me your bulletin on "Assembly Line" Addressing Systems.

Company_____
Individual_____
Position_____
Address_____
City_____ Zone_____ State_____

For more information circle No. 239 on Reader Service Card, Page 107

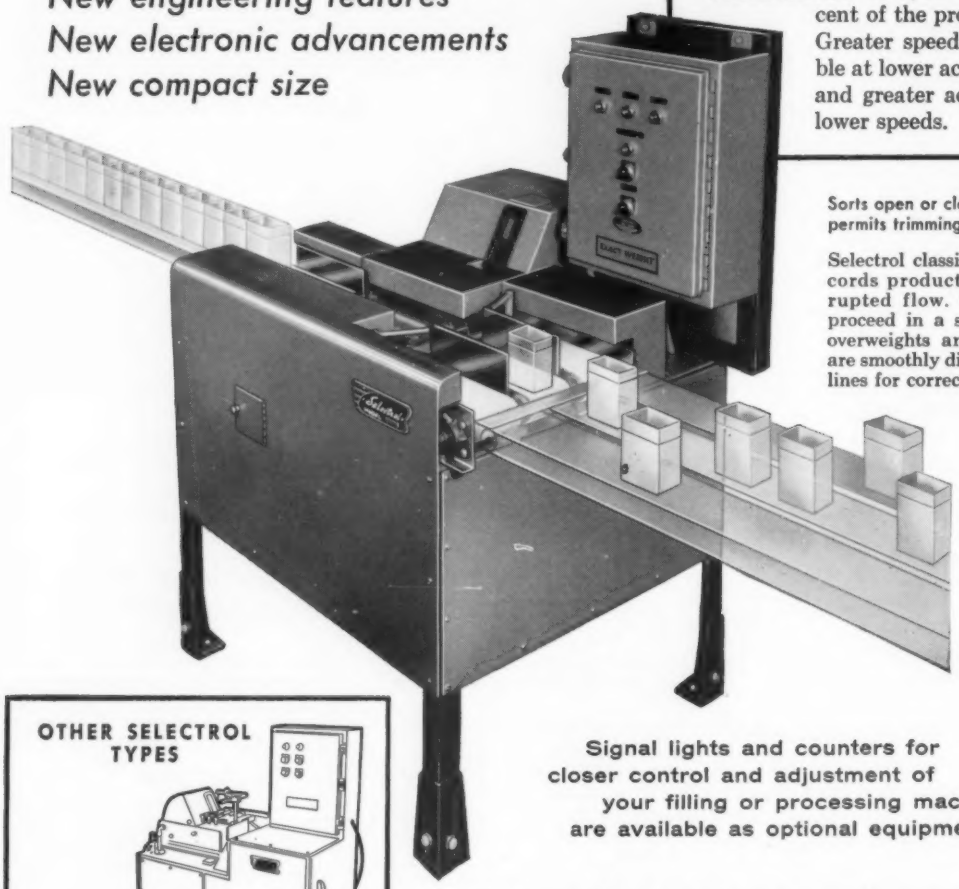
Exact Weight's New Automatic Checkweigher

New engineering features
New electronic advancements
New compact size

SELECTROL®
TYPE 1206

SPEEDS up to 120 weighings per minute.

ACCURACIES of 2/10 of one percent of the product. Greater speeds are possible at lower accuracies . . . and greater accuracies at lower speeds.

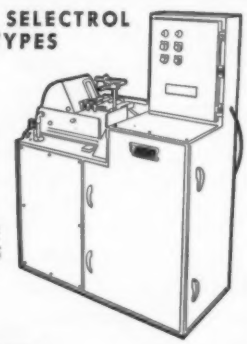


Sorts open or closed packages . . . permits trimming of rejects

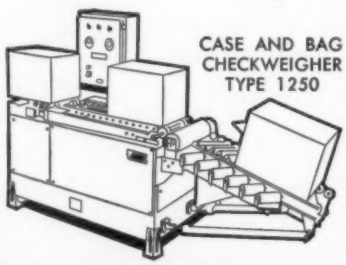
Selectrol classifies, sorts and records products in an uninterrupted flow. Correct weights proceed in a straight line flow, overweights and underweights are smoothly diverted to separate lines for correction or trimming.

Signal lights and counters for closer control and adjustment of your filling or processing machines are available as optional equipment.

OTHER SELECTROL TYPES



TYPE 1245



CASE AND BAG CHECKWEIGHER TYPE 1250

This new Selectrol Checkweigher, field tested and proven, is engineered to maintain the highest degrees of accuracies with relation to realistic speed requirements of most production lines. Operation is completely automatic. Tolerances are adjustable.

Selectrols are made by Exact Weight, a manufacturer of scales for 45 years, with experience gained through hundreds of checkweighing installations during the past 18 years in 28 states and in foreign countries. Write today for complete information on Selectrol and the advantages it can offer you.

THE EXACT WEIGHT SCALE CO.

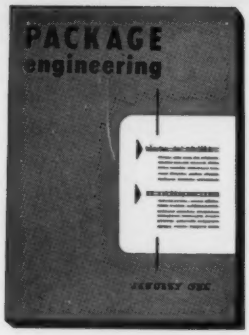
912 W. FIFTH AVE., COLUMBUS 8, OHIO

In Canada: 5 Six Points Road, Toronto 18, Ont.

Exact Weight SCALES

Sales and Service Coast to Coast

Find us in your local 'Yellow Pages'



Exhibitors

THE PACKAGING MACHINERY MANUFACTURERS INSTITUTE SHOW OF 1959

EXHIBITOR	BOOTH	HOTEL
A-B-C Packaging Machine Corp.	315	Commodore
Alford Package Machines, Inc.	118	
Algene Marking Equipment Co.	512	
Aluminum Co. of America	1008	Madison
American Sterilizer Co.	1117	St. Moritz
American Viscose Corp.	1106	Essex House
Ampoule Machine Co.	421	
Amsco Packaging Machinery, Inc.	1001	
Anderson Bros. Manufacturing Co.	210	Henry Hudson
The Arabol Manufacturing Co.	1108	Henry Hudson
Arenco Machine Co., Inc.	201	
Atlas Vac-Machine Corp.	704	Park Sheraton
Avery Label Co.	719	Manhattan
Baltimore Biological Laboratory, Inc., Div. of Becton, Dickinson and Co.	613	Statler-Hilton
Barkley & Dexter Inc.	105	Barbizon-Plaza
Bartelt Engineering Co.	317	Barbizon-Plaza
Battle Creek Packaging Machines, Inc.	815	
Bell-Mark Corp.	103	Essex House
Bemis Bro. Bag Co.	414	
Better Packages, Inc.	827	Manhattan
Bivans Corp.	1109	Essex House
Brown Filling Machine Co., Inc.	318	Barbizon-Plaza
The Burnet Co.	115	
John Burton Machine Corp.	517	Henry Hudson
Butler Automatic Machine Inc.	1122	
Cameron Machine Co.	822	
Chain Belt Co.	716	
Chisholm-Ryder Co. of Pennsylvania	930	Statler-Hilton
C.I.T. Corp.	715	Barbizon-Plaza
The Clark-Aiken Co.	1210	
Clybourn Machine Corp.	505	Henry Hudson
Arthur Colton Co.	816	Hampshire House
Conapac Corp.	728-32	Park Sheraton
Consolidated Packaging Machinery Corp.	416	Essex House
Container Equipment Corp.	1205	Essex House
Continental Can Co., Flexible Packaging Div.	1116	Plaza
Crompton & Knowles Corp.	1019-23	Essex House
Dennison Manufacturing Co.	1214	Barbizon-Plaza
Derby Sealers, Inc.	214	Park Sheraton
Dodge Fibers Corp.	1026	
Doughboy Industries, Inc.	1222	Barbizon-Plaza
E. I. du Pont de Nemours & Co.	1227, 29	Park Sheraton Barbizon-Plaza
John Dusenbery Co., Inc.	1110	
Economic Machinery Co.	1000	Statler-Hilton
Electronic Machine Parts, Inc.	220	
Elgin Manufacturing Co.	1215	Statler-Hilton
Elliott Manufacturing Co.	500	Roosevelt
Emhart Manufacturing Co.	411-15	Henry Hudson
The Exact Weight Scale Co.	200	
Felins Tying Machine Co.	321	Henry Hudson
J. L. Ferguson Co.	823	Essex House
Fife Manufacturing Co.	740	
Dave Fischbein Co.	102	Park Sheraton
Food Machinery and Chemical Corp.	1001, 05, 07, 11	Park Sheraton
General Corrugated Machinery Co., Inc.	316	
General Electric Co.	109	
General Packaging Equipment Co.	723	Park Sheraton
Gisholt Machine Co.	1209	Salisbury
Adolph Gottscho, Inc.	712	
Griffin-Rutgers, Inc.	600	
Hayssen Manufacturing Co.	808	
Fr. Hesser Maschinenfabrik	819	Barbizon-Plaza
Hi-Speed Checkweigher Co., Inc.	515	Taft
Allen Hollander Co., Inc.	113	
Horix Manufacturing Co.	1111	Statler-Hilton
Hudson-Sharp Machine Co.	1005	Park Sheraton
Huntingdon Industries, Inc.	217	Henry Hudson
Industrial Marking Equipment Co., Inc.	101	
The Inta-Roto Machine Co., Inc.	1206	Wellington
Island Equipment Corp.	809	
Ivers-Lee Co.	508	Statler-Hilton
R. A. Jones & Co., Inc.	1015	Manhattan
Kartridg-Pak Co.	1218	
Kidder Press Co., Inc.	104	
The Karl Kiefer Machine Co.	420	St. Moritz
Labelette Co.	711	Park Sheraton
The Lakso Co., Inc.	400	Essex House
Long and Co., Inc.	1204	Barbizon-Plaza
Lynch Corp.	916	Plaza
Machinery Service Co., Inc.	1000	
Marathon, a Div. of American Can Co.	731	Essex House
Markem Machine Co.	1114	Barbizon-Plaza
Marsh Stencil Machine Co.	1125	Park Sheraton
Martin Engineering Co.	706	Henry Hudson

EXHIBITOR	BOOTH	HOTEL
Mercury Heat Sealing Equipment Co.	612	St. Moritz
Merrill Machinery Sales Co.	108	Essex House
Miller Hydro Co.	314	St. Moritz
Miller Wrapping & Sealing Machine Co.	1001	Mayflower
Milprint, Inc.	304	
Morningstar-Paisley Inc.	1123	Savoy-Hilton
MRM Co., Inc.	204	
National Equipment Co.	216	
National Starch and Chemical Corp.	1200	Statler-Hilton
New Jersey Machine Corp.	1107	Essex House
Olin Mathieson Chemical Corp., Film Div.		
Oliver Machinery Co.	1014	Henry Hudson
OlsenMark Corp.	520	
Package Machinery Co.	805	Barbizon-Plaza
Packer Machinery Corp.	120	
Pak-Rapid Inc.	1027	
Pamarco Inc.	215	
Paper Converting Machine Co.	511	Commodore
Paper Machinery & Research, Inc.	215	
Peters Machinery Co.	303	Statler-Hilton
Pneumatic Scale Corp., Ltd.	307	Park Sheraton
Popper & Sons, Inc.	1119	
Poldevin Machine Co.	926	Park Sheraton
Print-A-Tube Co.	509	
F. B. Redington Co.	922	Park Sheraton
Resina Automatic Machinery Co., Inc.	203	Park Sheraton
Reynolds Metals Co.	404	
Riegel Paper Corp.	1211	Statler-Hilton
Robertson Paper Box Co., Inc.	116	Essex House
Saga Packaging Machinery Div.	736	St. Moritz
Scandia Packaging Machinery Co.	1022	
G. T. Schjeldahl Co.	504	St. Moritz
Schooler Manufacturing Co.	826	
Schroeder Machines Corp.	403	Park Sheraton
Shopsin Paper Co.	603	
St. Regis Paper Co.	605, 09	
Stanford Engineering Co.	119	Taft
Sundstrand-American Broach, Div. of Sundstrand Corp.	720	Barbizon-Plaza
Swift & Co.	308	Park Sheraton
Tompkins' Label Service	608	Barbizon-Plaza
Triangle Package Machinery Co.	1120	Commodore
Union Bag-Camp Paper Corp.	408	Savoy-Hilton
Union Paste Co.	1223	Park Sheraton
United Shoe Machinery Corp.	600	Barbizon-Plaza
U. S. Automatic Box Machinery Co., Inc.	1104	Plaza
U. S. Bottlers Machinery Co.	1100	Essex House
Vertrod Corp.	700	Essex House
Walton Laboratories, Inc.	1101	
Warner Electric Brake & Clutch Co.	701	
H. G. Weber & Co., Inc.	208	St. Moritz
Wolverine Paper Converting Machinery Corp.	100	Henry Hudson
The Woodman Co., Inc.	310	Park Sheraton
Wrap-Ade Machine Co., Inc.	826	
Wright Machinery Co.	211	Manhattan

HOURS OF THE SHOW

Monday, November 17th: 10:00 a.m. to 6:00 p.m.

Tuesday, November 18th: 10:00 a.m. to 9:00 p.m.

Wednesday, November 19th: 10:00 a.m. to 6:00 p.m.

Thursday, November 20th: 9:00 a.m. to 1:00 p.m.

These are the hotels where exhibitors are staying

Barbizon-Plaza
106 Central Park South
CIrcle 7-7000

Commodore
Lexington Avenue & 42nd Street
MUrray Hill 7-7000

Essex House
160 Central Park South
CIrcle 7-0300

Hampshire House
150 Central Park South
CIrcle 6-7700

Henry Hudson
353 W. 57th Street
COlumbus 5-6100

Madison
15 E. 58th Street
ELdorado 5-5000

Manhattan
Broadway & 76th Street
SUsquehanna 7-1900

Mayflower
Central Park West & 61st Street
COlumbus 5-0060

Park Sheraton
7th Avenue & 55th Street
CIrcle 7-8000

Plaza
5th Avenue & 59th Street
PLaza 9-3000

Roosevelt
Madison Avenue & 45th Street
MUrray Hill 6-9200

St. Moritz
50 Central Park South
PLaza 5-5800

Salisbury
123 W. 57th Street
CIrcle 6-1300

Savoy-Hilton
58th Street & 5th Avenue
ELdorado 5-2600

Sheraton
870 7th Avenue
CIrcle 7-8000

Statler-Hilton
7th Avenue & 33rd Street
PEnnsylvania 6-5000

Taft
7th Avenue & 50th Street
CIrcle 7-4000

Wellington
7th Avenue & 55th Street
CIrcle 7-3900

Booth-by-booth description begins on Page 85.

Packaging Institute's annual forum

Packaging Institute is holding its 21st Annual Forum at the Statler-Hilton Hotel, New York City, November 16-18. The theme is "Industry's launching site for projecting packaging progress."

Monday, November 16th:

10:00 a.m. Call to order. President's address, by C. W. Kaufman, National Dairy Products Corp. Annual business meeting, followed by package marketing "spectacular," "Your package dead or alive," by LeRoy M. King, Food Field Reporter, and Food Topics.

12:15 p.m. Opening luncheon.

1:00 p.m. Keynote address: "Projecting packaging progress," by W. C. Stolk, American Can Co.

2:00 p.m. Two concurrent seminars: *Package Marketing:* "Toward closer working relationships between the technical and marketing packaging functions;" Delbert Johnson, Continental Can Co., chairman. Topics: marketing side of packaging, Parlin Lillard, General Foods Corp.; internal communications, D. K. Shearer, Beech-Nut Life Savers, Inc.; W. K. Neuman, Continental Can Co.; L. D. Connell, J. Wiss & Sons Co.; advertising and promotion, E. G. Gibbs, Young & Rubicam, Inc.; color in marketing, O. C. Holland, Interchemical Corp.

Packaging Research and Development: "Projecting packaging progress through research;" P. B. Reuman, Continental Baking Co., chairman. Topics: aluminum packaging, M. A. Miller, Alcoa Research Laboratories; rigid and semirigid containers, J. M. Sharf, Armstrong Cork Co.; paper, paperboard, and film food packages, W. H. Gehrke, Marathon Div.; packaging in the U. S., Dr. J. W. Goff, Michigan State University; European trends, P. J. Louis, French Packaging Institute.

Tuesday, November 17th:

9:30 a.m. Three concurrent seminars: *Production Line and Machinery:* "Automatic control of packages on the production line;" A. R. Schaefer, New Jersey Machine Corp., chairman. Topics: special problems, G. M. Woodruff, and Carl Hebel, General Foods Corp.; the machinery manufacturer, R. R. Kitchen, Sterling Drug, Inc.; the consultant's role, Walter Friedman, Dasol Corp.; machinery supplier's role, W. M. Young, Richardson Scale Co.

Drug and Pharmaceutical: "Convenience packaging materials;" R. J. Hennessy, American Cyanamid Co., chairman, and B. F. Major, Ortho Pharmaceutical Corp., moderator. Topics: glass for convenience packaging, W. F. Gavigan, T. C. Wheaton Co.; metals for containers, N. H. Coonen, American Can Co.; plastics for convenience packaging, W. B. Tibbets, Union Carbide Corp.

Printing: "Get set with offset;" R. P. Long, Gravure, Flexography, and Packaging U. S. A., chairman, and J. L. Kroneberg, S. D. Warren Co., moderator. Topics: the latest in lithography, W. J. Ash, Consolidated Lithographing Corp.; lithography in the last 20 years, F. T. Marston, The Kaumagraph Co.; lithography for labels, L. L. Gamse, Gamse Lithographing Co., Inc.; lithography for folding cartons, R. T. Maston, Jr., Weyerhaeuser Co.; lithography for metal containers, J. L. Burns, American Can Co.

12:15 p.m. Luncheon. "Your package, friend or foe," by Miss Marie Kiefer, National Assn. of Retail Grocers.

2:00 p.m. Three concurrent seminars: *Production Line and Machinery:* "Bottle labeling," E. M. Wixted, Schering Corp., chairman and moderator. Topics: pharmaceutical labeling, William Dunlop, Jr., Wyeth Laboratories; food labeling, Ralph Flohr, The Kroger Co.; distillery labeling, I. R. Sipherd, National Distillers and Chemical Corp.; question and answer panel; J. L. Kronenberg, S. D. Warren Co.; I. G. Nichol, Morningstar-Paisley, Inc.; J. F. Parsons, Economic Machinery Co.; William Petraske, Nashua Corp.; D. J. Scott, H. S. Crocker Co., Inc.; Lee Smith, Bristol-Myers Co.; Helmut Voltmer, New Jersey Machine Corp.; C. P. Whittier, Owens-Illinois Glass Co.

Drug and Pharmaceutical (continued); "Convenience packaging—new devices," O. P. Norris, Winthrop Laboratories, Inc., vice chairman, and J. A. Kolbas, Bristol Laboratories, moderator. Topics: to market we go—rocket style, G. H. O'Donnell, Owens-Illinois; convenience packaging—metals, F. White, J. L. Clark Manufacturing Co.; convenience packaging—plastics, R. J. Metzler, Ludlow Papers, Inc.; barrier effectiveness, L. A. Preli, Union Carbide Corp.

Printing (continued): "Printing by rotogravure," R. P. Long, Gravure, Flexography, and Packaging U.S.A., chairman, and W. W. Fitzhugh, Jr., Gravure Technical Assn., moderator. Topics: "Key to merchandising," sound and color movie; rotogravure and paper, H. C. Sperka, Marathon Div.; rotogravure for films and foils, Chris Shepard, Milprint, Inc.; rotogravure and boxboard, J. G. McIlvain, Jr., Dowingtown Paper Co.; sheet-fed gravure, J. C. Dillon, III, J. C. Dillon Co., Inc.; question and answer panel: Oscar Smiel, Intaglio Service Corp. and J. H. Smith, The Dobeckmun Co.

6:30 p.m. President's reception.

7:30 p.m. Awards dinner. Address: "Professionalism in packaging," by Dr. M. W. Gross, Rutgers University.

Wednesday, November 18th:

9:30 a.m. Three concurrent seminars: *Industrial Packaging:* F. R. Campbell, National Gypsum Co., chairman. Topics: packaging and industrial management, C. J. Zusi, consultant; corrugated in automotive operations, R. A. O'Reilly, Jr., General Motors Corp.; multiple friction-top cans, Robert Blank, The Sherwin-Williams Co.; polyethylene as a packaging material, Thad Soldat, Allied Chemical Corp.; paper coating for industrial packaging, D. B. Parker, KVP Co.; purchasing's side, O. J. Burkland, Du Pont Co.

Food Packaging: F. W. Schreiber, Lever Brothers Co., chairman. Topics: citrus moves from wood to paper, R. B. Clark, Sunkist Growers; gas blowing of processed cheese, Dr. D. K. Alpern, Revere Copper & Brass, Inc.; baked goods in polyethylene, H. E. Hildebrand, Sr., Continental Baking Co.; single-serving soluble coffee package, C. C. Elsesser, General Foods Corp.; film: "A breakthrough in the frozen food field," T. W. Russell, Ace Carton Co.

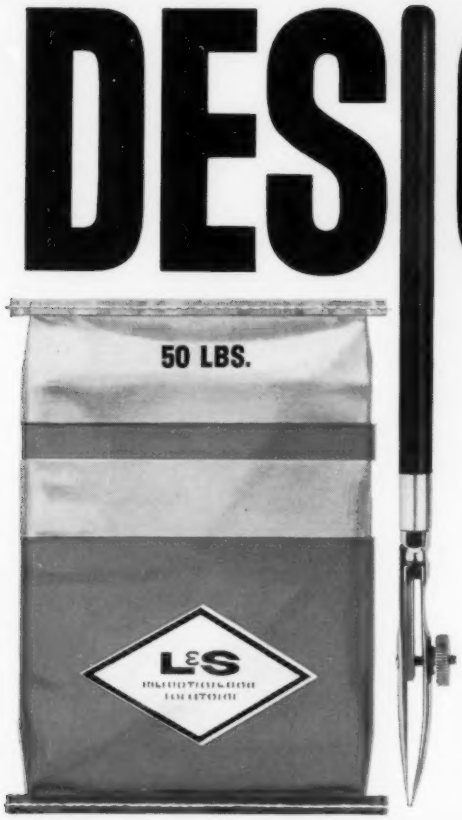
Closures: "The design of a new package to be filled under aseptic conditions and at high speeds," John Graham, Schering Corp., chairman and panel moderator, and Herbert Wheaton, American Flange Co., general moderator. Topics: plastic bottle, cap and dispensing plug, Robert Musel, Wheaton Plastics Co.; tamper-proof secondary closure, Lee Rhode, The West Co.; machinery needed, John Henderson, Chase Equipment Corp.; coordinating through purchasing, Fred Pickerell, Schering Corp.; designer's approach, Maxwell Rogers, Avon Products, Inc.

12:15 p.m. Luncheon. "Safety of packaging materials," by J. L. Harvey, Department of Health, Education and Welfare. *(End)*

OCCUPYING TWO COMPLETE FLOORS of the New York Coliseum, exhibits at the 1959 PMMI show are located as shown above. These exhibits are described "booth-by-booth" starting on Page 86 of this issue. Majority of booths feature machinery in action and provide personnel qualified to answer questions.

last year over 125 firms received greater merchandising impact from their multiwalls thru UNION-CAMP'S

BAG DESIGN



another FREE service of the 5 Star Packaging Efficiency Plan!

Over 125 multiwall users last year cashed in on the bag design feature of the 5-Star Packaging Efficiency Plan. In some cases UNION-CAMP artists came up with striking new bag designs which contributed to increased sales. In others they created a family of high-recognition designs for a complete product line. In still others they developed simplified, faster-reading identification prints —resulting in thousands of dollars worth of savings.

Through the 5-Star Plan, UNION-CAMP artists and designers may help you achieve greater merchandising impact from your multiwalls. Their services are free.

Besides bag design this comprehensive packaging service offers you major money-saving improvements in bag construction, specifications control, packaging machinery and materials handling.

See your local UNION-CAMP man for details.

UNION-CAMP
MULTIWALL BAGS
Union Bag-Camp Paper Corporation · 233 Broadway N.Y. 7, N.Y.

★ BAG DESIGN · BAG CONSTRUCTION · SPECIFICATIONS CONTROL · PACKAGING MACHINERY · PLANT SURVEY

temperature best suited for the extrusion.

Or, if a solvent-containing lacquer is to be coated onto a film, the film must be stable to both the solvent action of the lacquer and the temperature required for removal the solvent. The introduction of polyester film a few years ago was a great boon to the converters. Here was a material possessing great mechanical strength, heat resistance, and solvent resistance—a combination of properties making it attractive as the starting web for a number of excellent combinations with other materials.

An Effective Combination

An outstanding development made possible by the properties of polyester film was the introduction and immediate customer acceptance of "boil-in-the-bag" precooked, frozen foods. Polyester film extrusion-coated with polyethylene provided the desired combination of properties, strength, heat resistance plus heat sealability.

Vacuum-packaging of air-sensitive foods also became a thriving business through the up-grading of the good properties of polyester film by coating it with the still better gas barrier, polyvinylidene chloride. These are examples of commercial success resulting from the pyramiding of desirable properties via the converter's approach. However, an inherent limitation exists in multicomponent packaging materials because the properties of individual parts are not strictly additive.

What Won't Combine

Mention has just been made of the happy combination of properties that led to "boil-in-the-bag" foods, heat sealability of polyethylene with heat stability of polyester film. The elasticity of low-density polyethylene, largely responsible for the film's toughness, is "frozen" when this polymer is anchored to a relatively inelastic polyester base. Then, if a heat-shrinkable film like oriented polyvinylidene chloride is laminated to a nonshrinkable film, the two behave independently and wrinkling may result. **These examples will illustrate the inherent nonadditivity of the properties of different films and how they complicate the converters' efforts to meet packagers' needs.**

HOW FUTURE NEEDS WILL BE MET

In the future, the needs of the packaging industry will become more exacting. Rising production and shipping costs will furnish the impetus for expansion of plastic film packaging. Numerous foods, pharmaceuticals, petroleum products, pest-control chemicals, etc., that are now packed in glass or metal containers can be expected to show up in plastic bags. Such a switch presents tough technical problems, particularly in packaging and shipping liquid products in unit volumes of more than a few ounces, and in providing adequate shelf life.

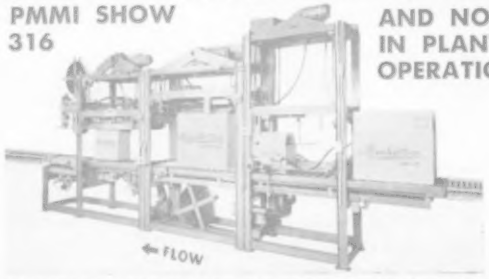
Finding plastic films that are not degraded by the particular liquid to be packaged, or conversely, that do not themselves contaminate the packaged liquid, is a straightforward problem. The solution of this problem becomes most complicated when time-consuming toxicological studies are needed.

Developments Face Hurdles

The industry faces much tougher problems in providing adequate, leakproof seals with production machinery. Then, special techniques may be a part of the processing of the items to be packaged—they may require sterilization (preferably in the bag), or very low-temperature packaging, or dust-free packaging. By the latter is meant freedom from a single, minute speck that could damage, for example, sensitive biological materials.

Plastic films that can withstand such rigorous processing conditions have yet another hurdle to clear: the abuse plastic packages of liquids take during shipment. Design as well as material prob-

SEE GENERAL'S
SELF - SETTING
CASE - SEALING - TAPER
FOR INTERMINGLED SIZES
AT THE PMMI SHOW
BOOTH 316
AND NOW
IN PLANT
OPERATION



IT'S A MARVEL IN TAPE SEALING AUTOMATION.
THE BEST NAME IN TAPING AND GLUING.
It costs to put off . . . Phone or wire now . . .
GENERAL CORRUGATED MACHINERY CO., INC.
Palisades Park, 17 Windsor 4-0644 New Jersey
Cable-Genco

For more information circle No. 242 on Reader Service Card, Page 107
Circle No. 243 on Card, Page 107

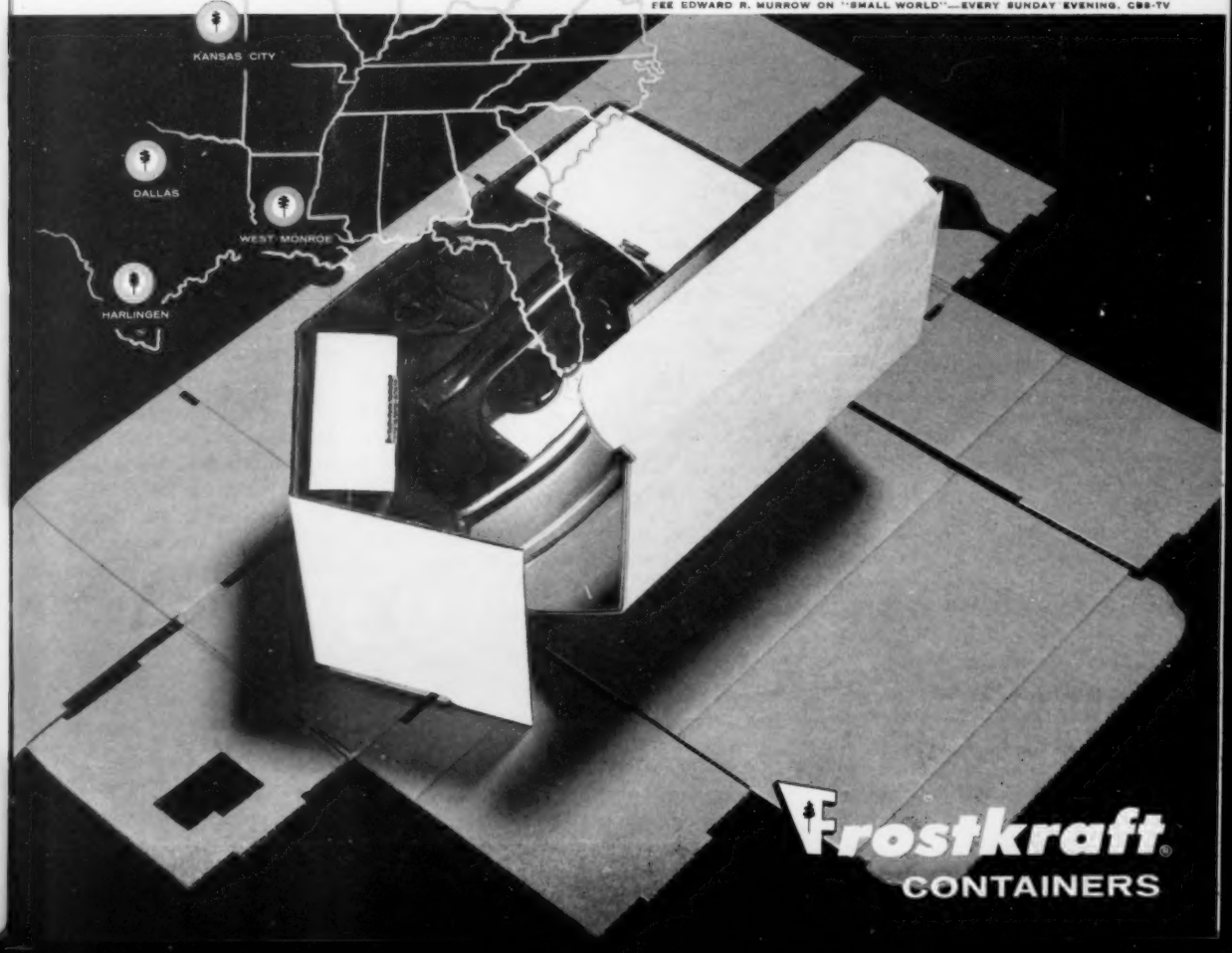
from OLIN MATHIESON

Instant packaging service!

Olin Mathieson has seven container plants that can improve your packaging. Our package designers working in four creative design centers and three National Safe Transit labs can speed-up your packaging operations, reduce shipping losses, and help improve your position at the point of sale. Call our nearest plant today: West Monroe, Louisiana; Cincinnati, Ohio; Joliet, Illinois; Kansas City, Kansas; Owosso, Michigan; Dallas, Texas; Harlingen, Texas.

OLIN MATHIESON • PACKAGING DIVISION

SEE EDWARD R. MURROW ON "SMALL WORLD"—EVERY SUNDAY EVENING, CBS-TV



lems enter into this phase of the operation. Both approaches will be needed in overcoming the problems posed by liquids sloshing around—packages bursting under the impact of hydraulic shock and crease failure of the packages through continual flexing.

Added to these problems are those of permeability of the packages to air gases. Uptake of oxygen spells ruin for many materials. Also, swelling and eventual bursting of the packages as they fill with air gases present a challenging problem.

Limitations Impede Progress

To meet this situation, the pattern already established will be continued. The producers will continue to fabricate new plastics in film form, measure the new film's properties, and adapt these properties to the needs of the packaging industry. The converters will continue to pyramid desirable properties of two or more films by combining them into laminates.

The objective of each of these groups is the same—to capture positions of importance in the rapidly expanding packaging industry by exploiting with great rapidity the advantageous properties shown by their new products. There is no doubt that improvements will continue to be made as new plastics become available. However, the predominately empirical approaches typical of both film producers and converters will not be enough to keep pace with the growing demands of the packagers

Both the producers' and converters' approaches are limited by self-contained difficulties. In fabricating newly available plastics into film, the producers are adapting materials that were not specifically developed for film and, therefore, lack certain properties needed for the film application. The converters can bridge some of these gaps by combining two or more films into multicomponent structures, but only at the expense of higher cost and complicating production problems. The best way to overcome these limitations is for the film industry to expand the more basic aspects of its research efforts.

Try To Find Out "Why"

To expand basic research means probing deeper into the reasons why polymers behave as they do. For example, why are some plastic films more transparent than others? What makes one film a better gas barrier, or water-vapor barrier, than another? What is the mechanism of gas or vapor transmission through plastic films? What is the nature of yellowing of plastic films? These are typical of the more basic problems relating to packing films. In short, the basic approach is one of searching for the reasons why materials possess the properties they do.

We do not mean to imply that a substantial amount of basic research relating to films has not been done. The excellent basic work done in connection with the development of oriented films has already been mentioned. Many other basic studies could be cited. For example, Lasoski and Cobbs have investigated the role of crystallinity and orientation in the water vapor permeability of polymeric films (*6*). Conix has correlated the softening temperatures of polyester films with their chemical structure (*4*).

These and many other similar approaches aid in solving present problems and in projecting the course to be taken in the development of polymers to fill future requirements. However, the amount of basic research in packaging films is meager compared with the total research effort.

View Of Future Demands

A sharply increased percentage of basic research is mandatory, if the industry is to keep pace with growing needs. Such an expansion of basic research would provide greater insight into the fine structure of polymers in film form and how such structure relates to physical properties of the films. Better understanding of the structure of polymers and the nature of processes at the molecular level will provide the leads for development of polymers of the future.

Any hope of tailoring new polymers specifically for film applications must originate with more thorough understanding of molecular architecture. This situation is partly due to a well-established principle in polymer chemistry, namely, the structure of polymer molecules is as important (if not more so) in determining properties than the kinds of atoms in their makeup. In other words, not only what is put together but how it is arranged is critical.

Wanted: A Workhorse

More basic research offers the most practical approach to the eventual development of a single, low-cost film combining the properties of adequate transparency, gas- and water-vapor proofness, mechanical strength, dimensional stability, and heat sealability. The goals for such a "workhorse" of the future might be:

Cost—
  $0.020-0.025/1,000 sq. in.
Transparency—
  zero haze
Gas Transmission—
  O_2: 0.50-0.55 c.c./100 sq. in./24 hr./0.001 in. at 77°F. and 760 mm. Hg
  CO_2: 2.0-2.5
Water Vapor Transmission—
  0/.05-0.10 gm./100 sq. in./24 hr./0.001 in. at 100°F. and 90% R.H.
Tensile Strength—
  15,000-20,000 lb./sq. in.
Dimensional Stability—
  $<0.3\%$ from 0°-212°F.
Heat Sealing Range—
  300°-400°F.

Such a "workhorse" would be in great demand for food and drug packaging, and would go a long way toward meeting the requirements of numerous other packaging operations. It would not, of course, replace specialty-type films like water-soluble films and those for extreme temperature applications. Our prediction is that the realization of the workhorse film, when and if achieved, will be the product of long-term basic research.

Literature Cited

(1) Brandenberger, J. E., U. S. Pat-

(*Continued on Page 122*)

THILCO

POLY-KRAFT

HEAT SEALABLE

POUCH PAPERS

KIRSCH
Kirsch BRACKETS
EXTENSION DOUBLE CURTAIN RODS
PROBLEM: Machine package curtain rod hardware in a protective pouch complete with printed trade-mark identity and installation instructions.
SOLUTION: Thilco clear polethylene coated M. F. Kraft permits high speed machine sealing — provides protection from dirt, corrosion and loss of parts.

offer "field-tested" proof of packaging superiority for protection and automatic machine forming

THILCO'S diversified range of Poly-Coated paper combinations solve these packaging problems

PROBLEM: Package dry soup mix in sales appealing print labeled pouch with positive protection from moisture absorption.

SOLUTION: Thilco white M. G. Kraft is foil laminated one side and clear polyethylene coated on other side for required moisture barrier. Eye catching 4-color label decoration is Thilco flexo-printed on gleaming foil side.

PROBLEM: Protect plastic switch plates from dirt and moisture — identify product, and permit consumer selection without opening package.

SOLUTION: Thilco trade-mark decorated M. G. Kraft with scuff-proof, varnished overlay on one side and clear polyethylene coating on other provides protection and medium for heat sealing to "see-thru" cellophane that forms pouch.

PROBLEM: Provide a moisture barrier pouch packet to prevent "caking" of hygroscopic dye granules.

SOLUTION: Thilco polyethylene one side coated M. F. Kraft furnishes the ideal moisture barrier combination. Thilco flexo-printing provides the all-important trademark identification.

THILCO
Functional Papers
THILMANY PULP & PAPER COMPANY
KAUKAUNA · WISCONSIN

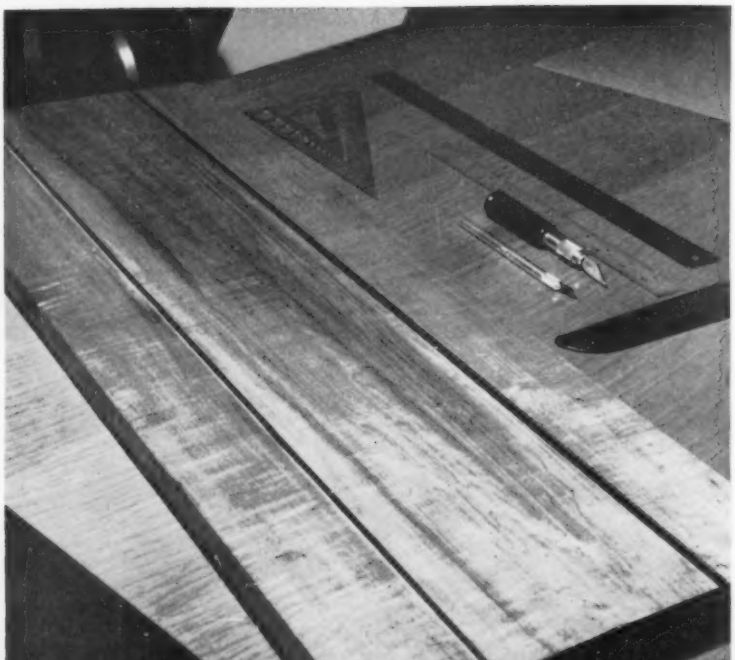
NEW YORK • DETROIT • CHICAGO • BOSTON • CINCINNATI

Get this free "tell-all" kit of samples

Complete, manual style kit contains sample grades of Pouch Paper combinations and helpful information guide on types, sizes and styles of pouches produced on automatic packaging machines.

Save time by making your own folding carton samples

By Edmond Creagh,
Packaging Engineer,
Ekco Products Company, Chicago



SAMPLE MAKING EQUIPMENT includes scoring die board, triangles, rulers, knives, and female scoring tool. Note that all of these are convenient size for keeping in office and using at desk.

There are many times a month that a packaging engineer, employed by a company that uses folding cartons, desires a sample in a "RUSH." There probably are times when it would be embarrassing for his company to say that the sample is not available at the desired time. There are occasions when circumstances do not allow the folding carton source to produce and deliver the sample at the desired time.

Time itself and development processes are two of the main extenuating circumstances. Sales departments are notorious, in the packaging engineer's perspective, for requesting immediate solutions to a problem. The production department may require a sample or samples for try-out on machines or time study. The purchasing department may require a sample to illustrate design to competitive bidders.

Want Prompt Service

Whatever department is the source of the request, its people de-

sire, and will appreciate, prompt service. **It is the packaging engineer's responsibility to design or implement the design of the functional aspects of his company's packaging.** In many cases speed is one of these design factors which he must consider.

It is also his responsibility to supply samples to be used in the preparation of artwork and to illustrate the new package to sales executives. His sample or samples also serve as a basis of machinery and production schedules. In many cases one sample would be sufficient to satisfy all the foregoing.

Making Your Own

Of course, it is necessary to have samples pulled from the actual die for semiautomatic or automatic carton forming, wrapping or filling operations but the supplying of "RUSH" samples generally falls upon the packaging engineer.

At times, he can obtain these from the carton source if this source is known and has been approved by the purchasing department, but this again takes time and the "RUSH" is still in capital letters. So the packaging engineer or one of his staff actually makes the sample or samples.

Making a sample when one has the necessary basic data and tools is a simple matter. In a time sense, you need from 5 min. for a simple reverse tuck carton to perhaps 2 hr. for a complicated die-cut design.

Seek Adequate Data

The necessary basic data, however, are not too readily available. Among the basic design data on which to base samples are the following items, some of which, unfortunately, are not always readily available.

1. Knowledge of product.
2. Merchandising requirements.
3. Production requirements.
4. Purchasing department policy.
5. Cost target.
6. Carton making machinery limitations.
7. Carton style.
8. Carton cost estimate.

However clever and experienced the packaging engineer may be, he must never subordinate the product to the package. The product is the first consideration. Its physical size, shape, material and its relative fragility with respect to rough handling and adverse atmospheric conditions all demand attention. An internal bag or wrap or an external bag or wrap, on rare occasions, may be considered as an integral part of the carton design.

Among other data needing your consideration are the merchandising quantity, distribution channels, stockroom or warehousing methods, methods of merchandising and the production equipment available.

Factors Affecting Design

The merchandising quantity both in the unit package and the total per shipping container will have effect on board caliper and type as well as carton style. For instance, if your unit package is to be one, and shipping container quantity one dozen, the strength requirements of your carton might indicate a 20-point board.

However, if your shipping container quantity is to be four dozen, the strength requirements of the unit package should be increased due to the lesser support received from the shipping container. This is because of the increased distance between the walls of the container dictated by the larger quantity of units.

The method of merchandising, the type of retail outlet and display at retail level, are perhaps some of the most important factors in structural design data, but here we must not confuse a stated merchandising requirement of "like box A" as "duplicate of box A."

One can, by a little investigation, give merchandising all the attributes of "box A" desired for a particular merchandising solution and still change the design enough to fill the other basic design data requirements. "Box A" may be a 25-point clay-coated kraft back

Ten steps to a folding carton sample

1 Using a sample of the product to be packaged, determine the carton style and its inside dimensions. Pay particular attention to the product and its exact position within the carton, and be sure to make adequate allowance for any extra folds.

2 Lay out the carton body on a sheet of paperboard. Be sure the lines of the scores are absolutely "square." Take care that they are perpendicular and parallel in the appropriate places as the particular design indicates. In doing this, use a long steel ruler (18 to 24 in.) and a sharp pencil. Careful use of the pencil point in lay-out work is necessary to avoid cumulative errors of measurement.

3 Now lay out the flat edges. Slit the locks or tucks in terms of standard production methods. In doing this, be sure the over-all dimensions of blank are correct.

4 Trim away excess board around the blank leaving a ½- to 1-in. border around the carton. With pencil extend the scoreline marks from the carton body to the edge of the board. Outline all cut, crease, and perforated score lines on the flat blank.

5 Make actual scores of the carton by using the female scoring tool on the scoring board. Before doing this be sure the inside of the carton is toward the female die.

6 Carefully trim the scrap away from the edges of the carton body, its flaps, and so on. Be particularly careful in cutting the slits for the locks.

7 Actually fold the carton to be sure that it sets up squarely. Then glue the glue laps in place on the carton body. Double check the correct fit in all respects—making certain of accurate dimensions and a truly square construction.

8 Verify the correctness of the fit by placing the product in the carton and closing it. Any errors of dimension or structure should show up at this point.

9 Record all details and file the sketch for safe keeping. Retain it until the design has been approved and carton fabrication on a production basis takes place.

10 Final step in connection with preparing for carton production is to draw up detailed structural and dimensional specifications. This records in exact terms all that you have done thus far in developing a carton.

USE SHARP PENCIL to lay out carton on stock, and steel ruler graduated in 64ths. Accuracy is important since errors become cumulative.

IN LAYING OUT FLAP OUTLINES, tuck template is helpful. This assumes correct choice of tucks and locks for particular carton requirements.

board, but the purchasing department may prefer a 28-point news board because of its advantageous price.

Because of the increased cost of labor, production requirements not only demand consideration, but also compliance in all but rare instances. **Never seriously consider a change in design that increases labor without some other factor in the design that more than compensates for this increase.**

Know Production Usage

A competent packaging engineer does not design a carton without knowing how it will be handled in production—either by hand or by machine. This portion of the basic design data could be elaborated on in great degree, but the details depend upon the particular plant's products, methods and machines and are so varied that any detail of help that could be given in this space would be of benefit to only a small percentage of readers.

If you use machine-handled cartons, you generally have enough volume to warrant careful experimentation with the compatibility of your board stock, finish, and adequacy of performance on the machine that is to handle your carton. You will check the bending qualities of the board, the degree to which it is folded, the individual dimensions of each panel and flap and their effect upon handling at each step in the machine. Watch out for any abrasive action within the machine; you must take it into consideration when specifying the finish.

If your production method is hand assembly, you should consult your industrial engineer or time study man in order to be assured that a proposed design will not unbalance a line.

Settling The Details

When we have the basic design data on hand, we can then select the style, size, stock and finish. Here we are faced with a factor which is a problem in any company: The necessity of cooperation between those responsible for the functional design and those responsible for the surface design.

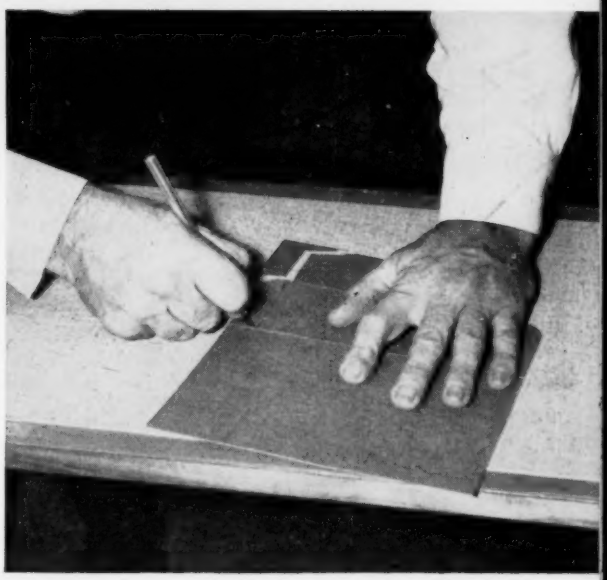
The two are generally of entirely different personality, background and aspirations. The packaging engineer's byword might be "cost" and the art director's, "sell"—both are necessary. Without cooperation and understanding of each other's problems, one or the other is apt to become the dominant factor in selection of new carton designs. This can result in an off-balance packaging effect and loss in sales, profit or both to the company.

Develop Your Spec's

The style will be influenced by those styles you already use for similar items in your line. Production machines and methods will

Edmond Creagh attended Loyola University, Chicago. Prior to entering military service, he was with John Sexton and Company and Kraft Foods Company. After his return from service, he rejoined Kraft, working in its package engineering department. Prior to joining Ekco, he was also associated with Quartermaster Food and Container Institute and Sears Roebuck and Co. Mr. Creagh is a member of Society of Packaging and Handling Engineers.

FEMALE SCORING TOOL MAKES CREASE. Scoring rule protrudes upward from scoring die, and stock, thus resting on it, is pressed into score.



TRIM SCRAP from scored blank. Sample simulates (as closely as possible by hand method) expected carton. Careful checking of fit is vital.

have their influence (a Simplex carton might "look good" but be hard to form on a Brightwood machine). This latter example may seem far-fetched, but unless the packaging engineer has the basic data at his finger tips, many equally drastic and ridiculous mistakes can and will be made.

Each company's packaging engineer must set up his own data as prerequisite to design. Your own file of specifications, drawings or sketches will be most helpful if they are complete—with the information they contain including packaging machines and methods used in various departments or plants.

A file of styles can only be assembled by the individual engineer since, in my view, the available published schematics are of little use except perhaps as a reminder.

This file can be assembled by reference to schematics or carton styles published by folding carton producers, associations in the field, and the packaging publications. All these are helpful visual aids to carton style evaluation. However, in order to use these aids as tools, the individual engineer must add dimensional data to these styles.

How To Avoid Errors

A listing of special performance requirements that can act as a checklist is helpful in avoiding costly errors in design. The individual items in this list will vary from company to company, but the following will be a start.

1. Does the carton have a dual purpose or utility (stockroom and retail) machine and hand set up, and so on?
2. Special atmospheric conditions in handling or storage.
3. Special purchasing requirements, such as use in combination runs or being obtainable from limited local sources.
4. Basic carton design use on a variety of product types in order to adhere to family identification.

The above is only a hint as to special requirements. They necessarily will vary between companies and must be formulated by personnel familiar with the individual company.

Two Guiding Rules

In the actual construction of samples, two cardinal principles should be observed: (1) Accuracy of dimensions, and (2) particular attention to having sample "in square." These principles are equally important for construction, illustration, artwork background, purchasing or industrial engineering aspects. (*Turn page*)

Seeking to avoid delays inherent in folding carton development when initial samples take time to get from suppliers, Mr. Creagh worked out a way of making samples right at his desk. But his review of the sample-making process involves much more than merely hand-cutting and hand-creasing methods. He itemizes the basic information on which good cartons rest, and he sets forth some elemental principles of structural and functional design. Besides listing the tools and information necessary in making samples, he also points out what tools are not readily available and what information is usually lacking. His plea and challenge as a packaging engineer seeking better and faster carton development should interest anyone seeking to refine and accelerate this aspect of packaging.

Samples for machine tryout on automatic machines must be taken from actual die. Hand-made samples are good only for ideas—not for conclusions or specifications.

What To Use

A sample can be constructed with a pen knife, a right-angle triangle, an accurate scale and a coin for crease-scoring, but there are other readily available tools which make the job faster and more accurate:

1. Knives. The particular type of knife is a matter of preference. Two commercially available knives, both of which have replaceable blades, are the Stanley No. 299 and the Exacto. The Stanley is more sturdy and can be used for both boxboard and corrugated; the Exacto with its variety of blade shapes will give better results on intricate curves and angles.

2. Steel tape. This is used for large blank dimensions and also for first rough cuts.

3. Steel, machine-graduated scales. These should be in 12-, 18- and 36-in. lengths, graduated in 8ths and 16ths on one side, and 32nds and 64ths on the reverse.

4. Protractor. The plastic transparent type is handy.

5. Triangles. A large right-angle triangle and an engineer's 30/60 triangle.

6. Pencil compass.

The foregoing tools are readily available from a number of sources and with them acceptable samples can be constructed.

Tools We Lack

However, a major point I would like to stress in this article is the *lack* of other tools that should be readily available but are not. These are, in the order of seriousness, as follows:

1. Lack of standards within the folding box industry and readily available information regarding machine blank sizes, board availability, and so on.

2. A sample board with provision for measuring, creasing and cutting paperboard with accuracy and speed, and containing provisions for interchangeability of standard die rules.

3. Exact-dimensioned list of corners, tabs, glue flaps, locks, and so on, and their relationship to carton inside dimensions.

4. An adequate long-lasting cutting board, surfaced with battleship linoleum.

Points To Remember

Any aid which decreases the actual time consumed in making the sample will add to the time available for adequate investigation of the carton's basic data and its end use. If sample making is a chore, it would perhaps stop the development of a satisfactory solution to a problem *at a point of bare acceptance,* rather than continuing to a point of entire satisfaction.

Aids You Can Make

The individual packaging engineer can overcome this lack of information and available tools with a little ingenuity which will ease his sample-making chore to a point where it is as readily used as a sketch pad. He can construct (or have constructed) a sample table, or if space is a problem, a sample board containing one or more crease-scoring steel-rule die lengths and a creasing tool.

The board should be made of hard wood (maple is good), 30 in. long and about 2 in. wide for each die rule. Grooves should be cut the length of the board to allow snug insertion of standard lengths of die rule allowing the top edge to protrude over the surface of the board about ⅛ in.

Three could be of various sizes to accommodate the range of board used in your sample making and two could be for use with perforating rule die, tear and reverse score. A simple hardwood tool may be constructed of a size similar to a tool handle with rounded grooves in either end to accommodate the female creasing action over the die rule.

A file of detailed dimensional sketches of commonly used flap, panel tolerances, tuck flap tolerances, lock device dimensions, etc. are helpful. **The incorporation of dimensional sketches in your specifications is an invaluable reference for all future sample construction.**

These Tools Would Help

Tools that are not available but would be helpful to all packaging engineers who find it necessary to make folding carton samples:

1. A loose-leaf booklet published by some supplier or association giving detailed dimensioned sketches of a wide range of styles, their uses and limitations. Available in loose-leaf form so that additions would be made periodically when new styles are developed. (This would seem a natural for some progressive folding carton manufacturer.)

2. A kit containing cutting dies formed to commonly used curves, angles and lock designs, a cutting surface (soft metal plate) and a plastic mallet. This could be made up by one of the steel rule suppliers and sold for cost as an advertising aid.

This kit would also tend to help standardize design toward those shapes therein contained, where feasible, rather than using a new arc or angle through happenstance rather than design necessity. Too often the new and different functional designs are initiated just to be new and different and not necessarily to improve. A new design is not good unless it is an improvement.

3. Templates constructed of a durable material for use with above design aids, one example of which is the Lord Baltimore Press "Unituck" folder. Its templates give the sample maker an easy guide in the curves and indentation dimensions used in reverse tucks with and without locks.

4. Standardization within the industry of carton types and nomenclature as well as board specification data.

How Different Are They?

At the present time you can get the identical folding carton (identical as to function) from quite a number of suppliers and each one has a special name for the style and board. You may ask for a two-piece full telescope infold carton of

(*Continued on Page 122*)

U.S.I. POLYETHYLENE NEWS

A series for plastics and packaging executives by the makers of PETROTHENE® polyethylene resins

NOVEMBER, 1959 U. S. Industrial Chemicals Co., Division of National Distillers and Chemical Corporation 99 Park Ave., N. Y. 16, N. Y.

Packaging Notes

A low-cost, semi-automatic bagging machine puts canned and bottled goods in preprinted polyethylene bags to stimulate larger unit sales to the consumer.

A brewery, for example, has increased its sales by replacing its conventional six-pack with an eight-can bagged unit. Quart bottles are bagged in units of three. As an added consumer advantage, the polyethylene bags can be filled with ice to keep the beer cold. The bagging machine can be used to package such canned and bottled products as soft drinks, soups, juices, and dog foods.

A new polyethylene and paper pouch for liquid bleach has been introduced. This disposable pouch for coin laundries holds 2½ ounces of highly corrosive 15% sodium hypochlorite. It is expected to replace the present eight ounce returnable bottles which hold 5% sodium hypochlorite.

The pouch is constructed of paper coated with 3½ mil polyethylene film. A special tear tape at one end permits opening of the package quickly and easily. The package reportedly is lower in cost. It has a shelf-life of six months.

Containers with built-in polyethylene coated paper liners are being used by a frozen foods company to package a portion of its frozen fruits.

Designed to eliminate the conventional overwrap, the new package is said to prevent leakage of the package's contents both before freezing and after defrosting. Liner and carton flaps are automatically sealed, with a combination of polyethylene heat sealing and adhesive.

The new package is more convenient to open than previous metal and fibre cans. Its special interlocking top flaps can easily be ripped off by the consumers without danger of spilling the contents. The new polyethylene lined carton stacks better and provides more printing area. It reportedly has reduced packaging costs and increased packaging speed.

Ralph Knight Appointed Vice President at U.S.I.

Ralph M. Knight has been appointed a Vice-President at U.S. Industrial Chemicals Co. The new appointment was announced by Dr. Robert Hulse, General Manager of the U.S.I. Division.

Mr. Knight will be responsible for long range planning and coordination of U.S.I.'s polymer development program. He will continue to direct the company's Polymer Service Laboratory as well as coordinate its efforts with other plastic activities in the company. Mr. Knight joined U.S.I. in 1953 as Polyethylene Manager. He is a graduate of Newark College of Engineering.

U.S.I. Plans 50 Million Pound Polyethylene Resin Expansion

Latest Increase Will Make U.S.I. World's Second Largest Producer

U.S.I. has announced plans for a new increase in production capacity of PETROTHENE polyethylene resins — this time 50 million pounds. The planned expansion will be at U.S.I.'s new Houston plant started up in February of this year. This plant, currently being upped from 75 to 150 million pound production per year, will be still further expanded to produce 200 million pounds.

This is part of U.S.I.'s new polyethylene plant located at Houston, Texas, at the time that finishing touches were being made on product silage units last spring. Originally built with an annual capacity of 75 million pounds, the plant is currently being upped to 150 million pounds, will have a final capacity of 200 million pounds, when further expansion is complete next year.

The expansions are expected to be complete by mid-1960, giving U.S.I. an overall production capacity of 300 million pounds annually. This will make the company the second largest among all polyethylene producers in the world.

Growth Has Been Spectacular

U.S.I.'s growth in the polyethylene field has been spectacular. Starting with a production capacity of 26 million pounds in 1955, the company will have realized increase in production of well over 1000% when the expanded facilities go on stream.

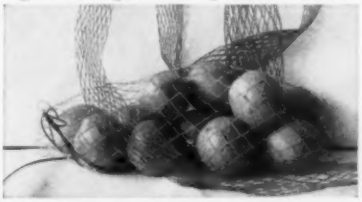
Along with this growth has come technical leadership in the field of polyethylene processing, particularly in packaging film. Eighteen months ago, U.S.I. pioneered a new technique for producing crystal-clear cast polyethylene film that is finding extensive application in large volume overwrap and bread wrap markets. While U.S.I. has specialized in low and medium density resins, it has done extensive research work on a new process for making high density polyethylene. The process is said to be superior to any now in use. U.S.I. also is studying the polypropyienes and other polyolefin copolymers in pilot plant operations.

Wide Range of Resins Available

In all, PETROTHENE polyethylenes are available in some 70 different resins, each varying in melt index, density, strength, clarity, gloss, slip, stiffness, and other properties. This wide range of resin properties is a result of U.S.I.'s program of tailor-making resins to meet specific molding and extrusion requirements.

Polyethylene Netting Made With Special Extrusion Die

A new polyethylene netting, extruded from a special reciprocating die, promises to have many decorative and practical applications. The die cross extrudes the polyethylene filaments, welding them together at point of contact while the resin is still molten. The filament junctions are stronger than is possible with heat sealing.



Both decorative and practical applications are foreseen for continuous tubular netting like this which is now being produced.

At present the net can be produced in widths up to 36 inches and in tubular form. Multicolored effects can be obtained and the mesh can be varied from very fine to fish-net coarseness.

The manufacturer is now developing an automatic bag machine for packaging vegetables and other produce.

New Ultraviolet Absorber For Polyethylene

A new ultraviolet absorber for polyethylene is currently being evaluated. Thus far, carbon black has been the most commonly used screen for ultraviolet light.

The new compound, if successful, will permit extended outdoor use of clear and colored polyethylene compounds. Field tests have already shown that 10-mil polyethylene film mixed with .171% by weight of the absorber, retained 85% of elongation after two months use in strong sunlight.

Structural redesign for damage-free packaging, less material use

By Ray Jaski,
Packaging Engineer,
Kitchen Appliance Division,
Hotpoint, Division of General Electric Company,
Chicago

Improving the total effectiveness of a packaging operation represents a combination of many things. Doing this for the packaging of his company's electric ranges, Mr. Jaski and his team, under the direction of Edward Zelinski, senior packaging engineer, (1) revised and simplified the interior packaging members, (2) redesigned the corrugated box and came up with a new corner post design, (3) reduced use of corrugated board throughout and (4) adjusted the packaging line operation to meet the requirements of their new packaging. Payoff: Hotpoint saves $44,000 a year.

Proper attention to structural and functional package design and proper coordination of it with (1) interior packing, (2) in-plant packaging line operations and (3) efforts to cut material usage, can pay dividends. We found this to be the case with our packaging of electric ranges. Just one redesigned package for these ranges is saving us $44,000 a year. Incidentally, this does not include an annual saving of $12,000 on the interior packing of these range packages. The big point is that we are getting these savings without impairing package quality and actually are gaining our major objective of intact packaging all the way to the point of use.

Most of our 75 different models of ranges fall into two categories, those 30 and those 39 in. wide. We have geared our packaging line to handle these two categories, and our redesign program took them into account. **A company-wide value analysis program directed our attention to an excessive cost for the cap of our original package.** As a starting point of our project, we looked for a way of getting a less expensive cap without sacrificing anything functionally. We wanted to use as little material as possible and still meet our packaging requirements.

Improvements Needed

Our old package used a plain corrugated tube for its body and had a set of top and bottom caps. The top cap was of double construction—a double cap with two side supports. The purpose of this was to prevent the cap from shifting out of place; and, as a result, we had a cap within the cap so that the upper part of the corrugated tube fitted within the tube cap members, thus holding it in place. Also we used side supports.

Another drawback of our former packaging was its failure to capitalize on the compression potentiality of corrugated packaging. Although compression tests revealed 4700-lb. compression, we actually were getting somewhat less. The trouble was that the tests were predicted on a flat surface or area-wide compression. In actual practice in our plant and warehouse, the packaged ranges are on wood skids having three runners.

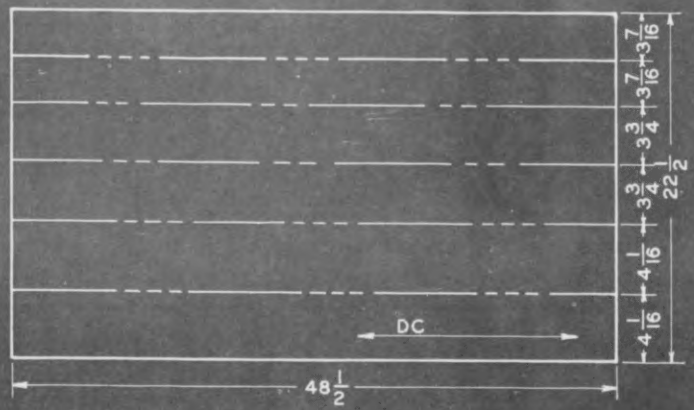
As a result, when packages are stacked one on another, the compression is concentrated rather than spread out over the area of the box. This led us to design our packaging with a view to meeting the actual compression needs as found along the three lines indicating the positions of the skid runners.

Results With Corner Posts

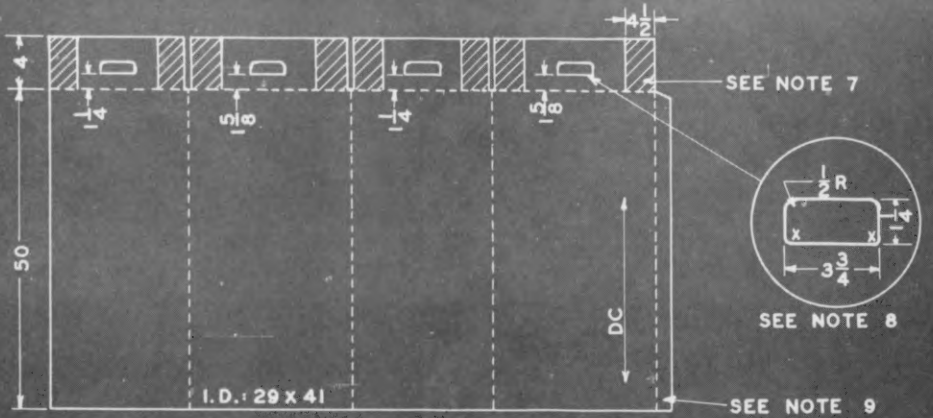
When we developed our new packaging, we attained 65,000-lb. straight compression by the normal tests, and by placing the skid on top, we reduced this compression 300 lb. But in all we got a 50 per cent increase in compression. This is because we never got the compression originally anticipated under the 4700-lb. test due to the fact of our actually having runners rather than a flat surface for the compression. **As a result of our redesign of the corner posts, we now are bearing on 75 to 80 per cent of the material in the corner post, so it is doing more of the job than previously when (because of the skids) it was not getting its proportionate share of the load.**

Our new box uses 350-lb. double-

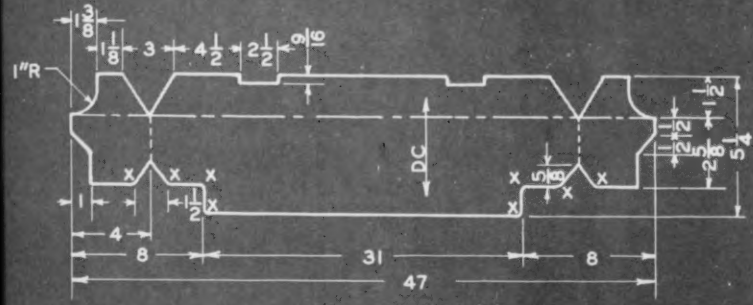
STRUCTURAL DESIGN FEATURES include one-piece corner posts (A) easy for line operator to fold in place; double-wall corrugated tube (B) to form box body; one-piece interior member (C) to hold oven parts in place, and top and bottom caps (D) to secure at each end of tube (B), using hand holes to lock it in place on all four sides, thus eliminating double cap construction.



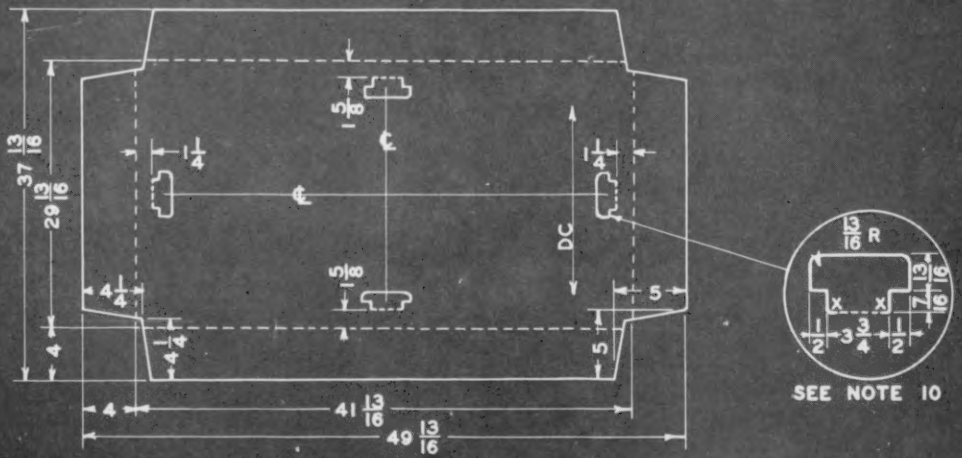
CORNER POST (A)



FLANGE TUBE (B)



PAD—FRONT (C)



CAP—TOP & BOTTOM (D)

NOTES:
1. ------ SCORE ON THIS SIDE
2. — · — · — SLIT SCORE
3. — · · — · · — REVERSE SLIT SCORE
4. — — — PERFORATED SCORE
5. X = 1/8" R.
6. TOLERANCE: ± 1/16" EXCEPT (A) 48 1/2 DIMENSION IS + 0, − 1/8
7. CRUSH FLUTES IN SHADED AREA WITH HARD RUBBER DIES
8. HANDHOLES CENTERED LEFT TO RIGHT IN FLAPS
9. MFGR'S. JOINT STITCHED PER RULE 41
10. HANDHOLES (LONG DIM.) CENTERED BETWEEN SCORES
11. DC = CORRUGATION DIRECTION
12. MATERIALS: (A) 33-26-33 # KRAFT LINERS WITH 36# CORRUGATING MEDIUM
(B, C, D) 100 # KRAFT LINERS

REDESIGN OF CORRUGATED CORNER POSTS resulted in allowing load to bear on 75 to 80 per cent of material in each corner post. Former packaging failed to distribute load properly, but in new package each post carries its proportionate share.

CORNER POST FORMS FROM CUT-AND-SCORED SHEET of 33-lb. kraft inner and outer liners, 26-lb. kraft middle liner (center wall). Corrugating medium is 36-lb. semichemical stock.

wall corrugated board for the 39-in. range, and 275-lb. double-face corrugated board for the 30-in. models. Caps, both top and bottom for both models, are 275-lb. double-face board using kraft liners and semichemical corrugating medium.

Our new corner posts are each formed from a cut-and-scored sheet using a combination of 33-lb. kraft inner and outer liners, and 26-lb. kraft for the middle liner or center wall of this double-wall board. A special feature of our corner post construction is use of a 36-lb. special semichemical stock for the corrugating medium. These corner pieces are made from one sheet, slit-scored by the fabricator. All the operator at our packaging line must do is to fold the sheet into place, and he has a set of three nested corner posts. The design is such that **one man can easily and quickly form it for insertion into the box at each of the four corners.**

No More Double Caps

In developing a new cap, we found a way to eliminate the former double cap. Since a key problem was that of locking the cap in place on the box in order to hold the cap intact, we found that by putting small hand holes in a single cap, we could have a means of locking on all four sides. This eliminated the need of a double cap construction. We found that we could accomplish our objective functionally by using a single cap costing $0.24 compared with $0.52 for a double cap.

Here is the primary area in which we saved $44,000 on this package. However, our savings here illustrate the possibilities inherent in structural redesign. By getting a substantial saving in one area of a package, we were justified in putting additional cost elsewhere in the packaging in order to attain our overall objective. For example, we increased the cost of the corrugated tube $0.05 by adding the flanges. These are necessary for the proper use of this box in contrast to the old packaging with the double cap.

In evolving a cap, we tried and rejected several different models and watched for effects of load shifting and different conditions of box strength. When we hit on the use of locking hand holes, we achieved our objective. Doing this justified our putting in the flanges to supplement the single cap—all

Ray Jaski attended the Greer Shop Training schools and Illinois Institute of Technology. His education also includes value analysis and time-study methods—a part of his company's training program. Before joining Hotpoint two years ago, Mr. Jaski was for ten years associated with Motorola as a military packaging engineer.

See it in operation at the PMMI Show—Booth 1005

FMC Checkweigher with smooth, positive 3-way segregation.

NEW fmc high-speed electronic Checkweigher

. . . gives you hairline accuracy plus segregating flexibility

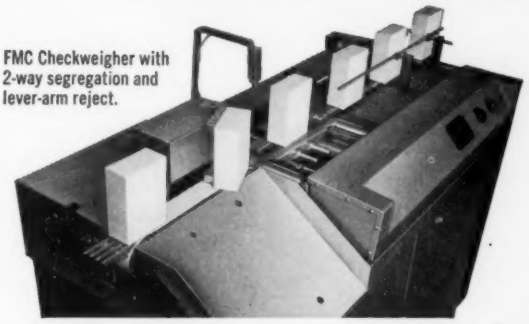
Whatever your requirement there is probably an FMC Checkweigher to provide close and accurate control of your production. Speeds up to 400 containers per minute handle the output of most production lines. And with three basic reject methods to choose from, for both 2-way and 3-way segregation, the ideal system for your problem and package can be engineered. The result is a precision piece of equipment perfectly matched to your production requirements.

Accuracies up to ± ¼ % of the total package weight are possible with all three segregation methods:

3-Way Segregation—This system is recommended for open packages and tall containers. After the package is weighed and classified, the metal slats of the conveyor move the package straight ahead or ease it to the right or to the left, depending upon whether it is acceptable, underweight or overweight. The action is positive, yet smooth and gentle.

2-Way Segregation with Air Reject—With this system a jet of air removes rejected containers from the conveyor. It is most effective with small, closed containers and can be adjusted to reject either underweights, overweights, or both.

2-Way Segregation with Lever-Arm Reject—Recommended for heavier, closed containers, this system offers the same three reject choices as the air system.



FMC Checkweigher with 2-way segregation and lever-arm reject.

FMC Checkweighers handle cans, jars, trays or boxes—virtually any semi-rigid container with one flat surface ranging in size from 1½″ x 1½″ to 10″ x 10″. They are splash-proof, easy to clean, and occupy only 48″ x 24″, with the height adjustable to fit production lines. The electronic system is mounted on a single plug-in chassis and housed in a slide-out drawer for easy maintenance.

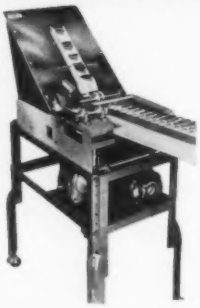
In addition to the basic equipment, the checkweigher can also be equipped with a feedback control, recording devices to produce a printed record of production, and special-construction models for dusty or explosive conditions.

For complete information about versatile FMC checkweighing systems, call your FMC representative or write:

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division
Stokes & Smith Plant
4994 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

NEW LABELETTE FEATURES
AUTOMATIC ELECTRONIC FEEDER



Designed To Make Your Labeling Faster, Easier and More Economical

- New unit automatically feeds, handles and places labels of various lengths onto round containers.
- No buttons to press, no levers to operate, no hands needed.
- Auxiliary manual feed unit for special labeling applications.
- Labels glass, tin, fiber containers.

Come in for a free demonstration or write, phone for further details.

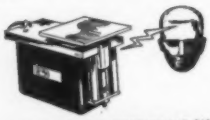
LABELETTE COMPANY
216 So. Jefferson Chicago 6, Ill.
Telephone: FR 2-1215

Circle No. 248 on Card, Page 107

DEFEAT
DENSITY DRIFT
automatically
with
AVION FILL CONTROLS

•

RELIABLE
no tubes • rugged
SIMPLE
compact • easy to install
ECONOMICAL
low maintenance
plus
HIGH SPEED ACCURACY!



AVION acf AVION DIVISION
ACF INDUSTRIES INCORPORATED
9 Park Place, Paramus, N.J.

Circle No. 249 on Card, Page 107

ONE-PIECE INTERIOR PACKING UNIT holds oven members intact and eliminates seven separate pieces, frees one man from job. Result: Complete absense of field damage due to this packing.

in replacement of the earlier double cap.

New Interior Packing

Another major area of saving was in our redesign of interior packing. We now have a one-piece interior packing unit which holds the oven members intact within the oven of the range. Different flaps and structural members fold in place to lock various units of the oven in position. For example, there are locks within flaps, such as to hold the oven spit, bake unit, broiler unit, and racks in place.

By developing this one major corrugated insert piece plus one pad we have eliminated seven separate pieces and have been able to free one man from this operation for work elsewhere. We got a $12,000 annual saving plus the saving inherent in the replacement of one man on this job.

Far more important, however, we attained, for all practical purposes, a complete absence of field damage in connection with this packaging. Here, as with the caps, we undertook to use less material than previously. We also considered, along with economies in the per square foot use of materials, the ability of the inner flaps of the top piece to provide more end-to-end and side-to-side strength than the previous package provided. Another advantage: Fewer pieces for inventory.

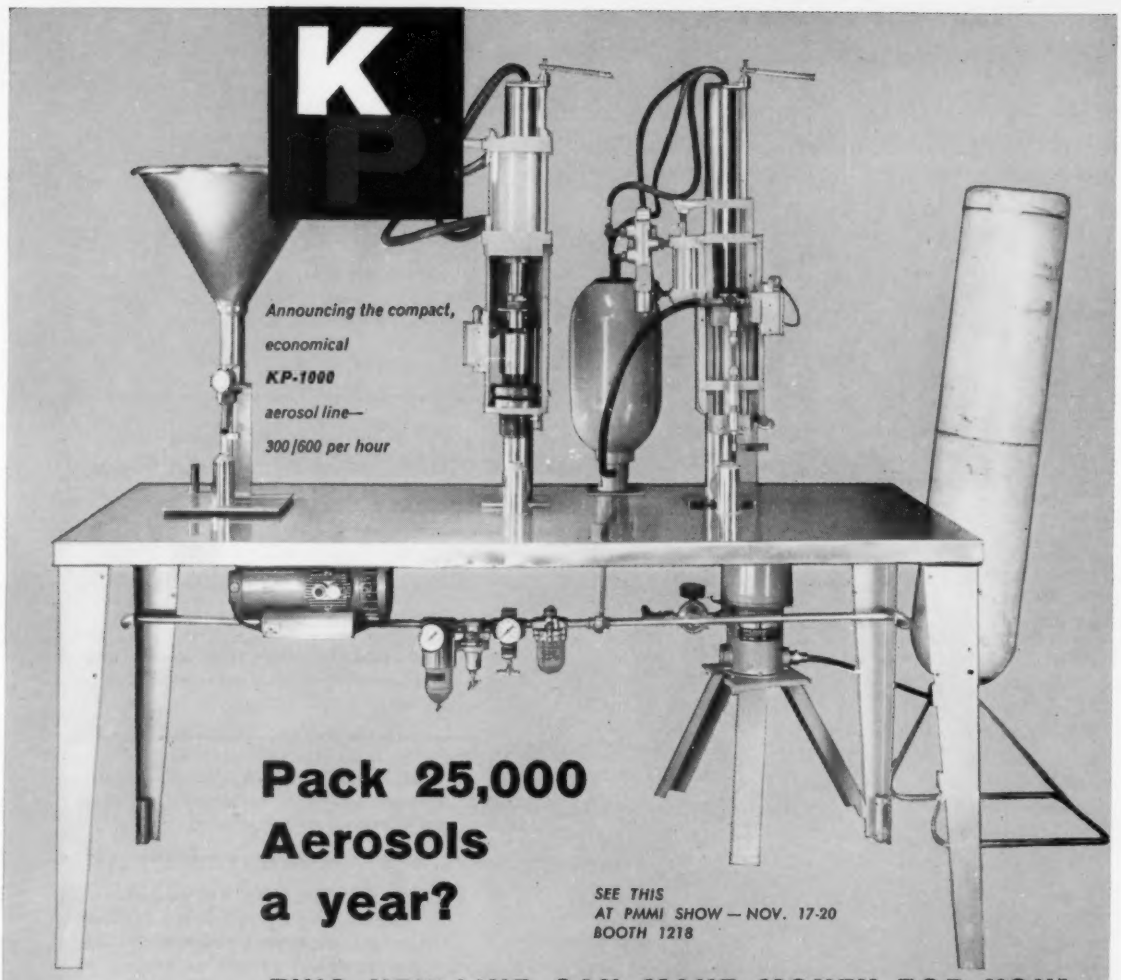
By the time a range reaches our packaging line all the interior packing has gone into place, the doors have been taped shut and the inspection and preparatory operations are complete.

Packaging Line Details

First operation on the principal line is for the crew members to slip the corrugated tube in place. After this they position the four corner posts and the top cap. The bottom cap goes into place during the automatic sealing operation. A worker feeds this in as the case is moving into the sealer. Thus it enters with top and bottom caps in position, after which glue is applied to two flaps, top and bottom, which then are glued and sealed.

Next, the case does one of two things: If it holds a 39-in. model, it turns 90° making a left turn off the main line and goes through a special case gluing application unit designed for this larger model. Following the sealing, it returns via a bypass conveyor to the main line.

(Turn page)



Pack 25,000 Aerosols a year?

SEE THIS
AT PMMI SHOW — NOV. 17-20
BOOTH 1218

THIS NEW LINE CAN MAKE MONEY FOR YOU!

Easy to operate, compact yet complete, the semi-automatic KP-1000 comprises a piston-type filler, a vacuum crimper, and a pressure filler. Whether or not you are packaging aerosols now, or only thinking about it, you should get the facts on this economical quality equipment.

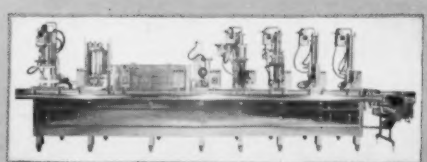
Mojonnier lines have filled *and are now filling*—more aerosol cans than any other make of equipment. As the most experienced specialists in aerosols, Mojonnier offers you a single source, with undivided responsibility, for all aerosol packaging equipment. Every unit is engineered to function with the others.

For large-volume production, Mojonnier automatic lines have capacities up to ten million aerosols a year.

Laboratory equipment, for pre-testing your package, can be rented and the modest rental applied on the purchase.

Get all the facts fast!

To have an area sales engineer call on you promptly, put in a call to us, or write today. Kartridg-Pak Co. Dept. H, Franklin Park, Illinois. Address 9151 W. Fullerton Ave., or telephone Chicago, NAtional 5-8270.



NEW "800" LINE, the automatic single straight line. Also available as double track line for larger volume. Completely engineered throughout.

This Gun is Loaded!...

...WITH DESIGN FEATURES THAT MEAN MAXIMUM CUSTOMER SATISFACTION

R.C.'s new anti-clog SPRAY GUN

- **ANY-DIRECTION VENT**—even sprays upward, for under side of foliage. Preformed in just the right size; no danger of user punching hole too large or too small for proper use.
- **CLOG-PROOF FEED**—Scientifically perforated underside of plug permits powder to pass through... prevents lumps from clogging discharge vent.
- **EASY-FILL TOP**—Large 1⅞" friction plug.
- **WAX-COATED INNER TUBE**—Special wax gives moisture protection and smoother pumping action.
- **SPECIAL FELT INNER VALVE** — Allows easy passage of air during pumping action, yet effectively seals in powder.
- **PATENTED BELLOWS VALVE** — Positive operation—opens on back stroke to admit air into pumping chamber; closes on forward stroke, for efficient pumping action.

..and for added ammunition..these COMPANION PACKAGES by R. C.

For refill, or for related use, R. C. Cans offer many extra features: paraffin coating, special moisture proof laminations, and a wide variety of tops (with or without identations for sifting).

R.C. CAN COMPANY

R.C. CAN CO. The Stamp of Quality ST. LOUIS, MO.

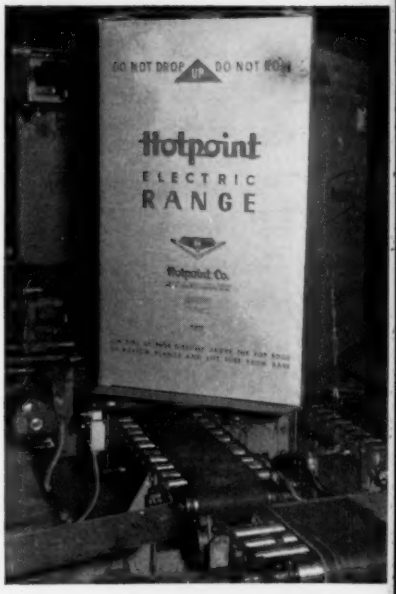
MAIN OFFICE and Factory 9430 Page Blvd., St. Louis 14, Mo.

Branch Factories: Arlington, Tex.; Rittman, O.; Turner, Kans.

Main Office & Factory: 9430 Page Avenue, St. Louis 14, Missouri • Branch Factories at: Arlington, Texas; Rittman, Ohio; Turner, Kansas; Hawthorne, Calif.; Milwaukee, Wisconsin • Atlanta 6, Georgia—L. C. Morris Co., P. O. Box 8042 Station F, 1156 Dalon Drive, N.E. • Boston 10, Massachusetts—Robbins Paper Company, 263 Summer Street • Chicago 51, Illinois—Joe Rovin, R. C. Can Company, 4806 W. Chicago Ave. • Cincinnati 2, Ohio—Harris Containers, A. J. Harris, 307 E. Fourth St., Rm. 426 • Indianapolis 20, Indiana—John C. Heim, 1500 E. 77th St. (Mail Address, P. O. Box 6043) • Los Angeles 43, California—Can Supply Company, 4429 Crenshaw Blvd. • Memphis 3, Tennessee—S. W. Scott & Son, 608 McCall Bldg. • Milwaukee, Wisconsin—National Paper, Can & Tube Company, 401 South 7th Lane • Minneapolis 1, Minnesota—W. L. Bennett, 126 S. Third St. • New Orleans 12, Louisiana—C. E. Dobson, 1003 Crondelet Bldg. • New York City, N. Y.—R. C. Can Company, 225 W. 34th Street • St. Petersburg, Florida—J. H. Mackensen, Bay Pines Trailer Park, 10005 Bay Pines Blvd. • San Antonio, Texas—Larkin C. Smith, Jr., 614 West Kingshighway.

For more information circle No. 251 on Reader Service Card, Page 107

AFTER CORNER POSTS AND TOP CAP ARE POSITIONED, box moves into automatic sealer where it receives bottom cap (above). Now top and bottom caps are in place for gluing and sealing.



TURNTABLE AUTOMATICALLY MOVES BOX 90° so second set of top and bottom flaps may be glued. Note other set is already sealed.

If it is a 30-in. model, instead of making the left turn, a turntable device takes it, moves it 90° so that it exposes the other two sets of top and bottom flaps. At the conclusion of this operation (similar to the first) all four top and bottom flaps are glued and sealed in place. There is a compression section approximately 12 ft. long through which boxes move following the glue application. The length of 12 ft. was determined in order to provide the correct interval of time. **Compression rests on a time rather than space concept, and 12 ft. at the current operating speed provides the necessary dwell time for the glue drying.**

Once the cases go through the sealing operation, they move on our plant conveyor system to the warehouse. Here they are stacked up seven high prior to shipment from our plant. This emphasizes the importance of adequate stacking strength.

When using corner posts in an operation of this sort, it is imperative to have the correct combination of front packing pieces. These go into place before the unit reaches our principal packaging line.

Technique Of Design

Essense of a structural design project is to take one piece at a time and work on that. **The knack is to see where material can be cut, to spot what can be taken out.** Can you do the same job at less cost? What can you substitute? These are the sort of questions structural and functional package designers must ask. It is essentially a subjective and creative process. A man either has a knack for it or he hasn't. But the underlying process remains **the systematic analysis in taking one part, one member at a time.**

In addition to saving $44,000 a year on this package and getting a 50 per cent increase in top-to-bottom compression strength, we gained a number of other advantages. For example, we get seven more units per railroad box car in each outgoing load by virtue of our cutting the length and width of each package.

Also we have improved the gluing operation. By eliminating the bulging out that normally would take place during warehousing, we have allowed more compression and, hence, have been able to get a better sealing operation. This is due to the redistribution of strength which accompanied the change in compression. In readjusting our sealing equipment for the new package, we brought down the length and width proportionately.

We have installed a stitching and preforming operation for the corrugated side supports. This has made possible transferring one man from our packaging line and contributing to a general reduction in inventory of individual components. But above all we have improved the quality of the package without adding, and in fact actually decreasing, its cost.

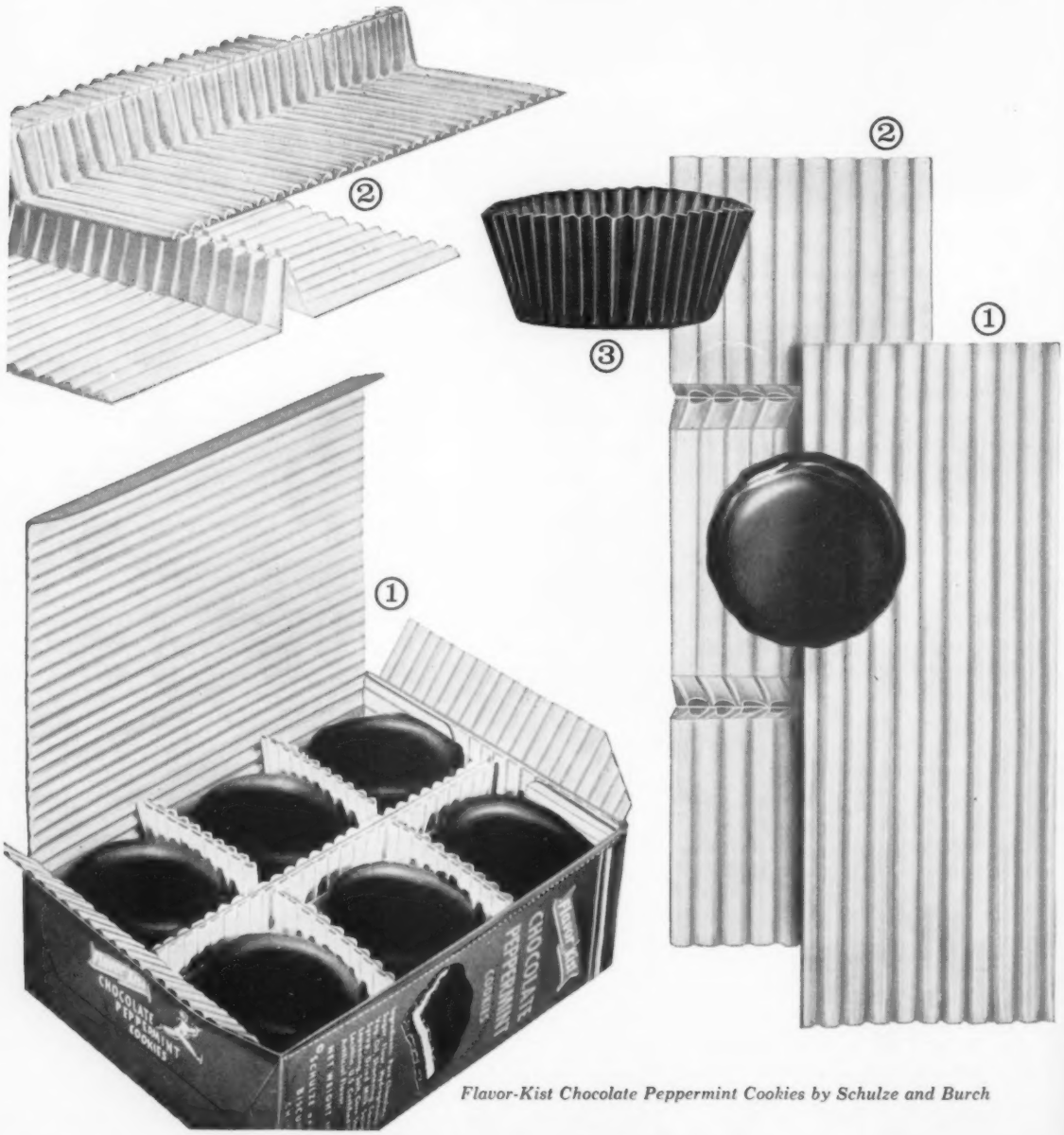
We have eliminated field damage complaints. This represents a major area of interest to us. Similarly, we have provided easier package handling by our distributors. All of them like our new package because it stacks more satisfactorily in their warehouses. Their stacking requirements are considerably less critical than ours because we stack seven cases high without getting any bulging of the bottom cases, and most distributors stack only three high or less. (*End*)

Good Cookie Packaging...makes triple-play with Rhinelander Papers!

This photograph displays the versatile teamwork of Rhinelander Glassine and Greaseproof papers in providing excellent three-way package protection for chocolate peppermint cookies. ① Corrugated Glassine is laminated to chipboard. This gives added strength to the overall package, prevents staining, and cushions its contents against damage. ② The inner dividers and trays of corrugated Greaseproof provide support against shock and staining. ③ Fluted cookie cups of rich red Glassine add a pleasing note of color and give greaseproof and shock protection.

These economical Rhinelander papers perform well on modern laminating and packaging equipment. Write for samples and complete information for the packaging of your product.

RHINELANDER PAPER COMPANY • RHINELANDER, WISCONSIN • *Division of St. Regis Paper Company*



Flavor-Kist Chocolate Peppermint Cookies by Schulze and Burch

Here is a booth-by-booth review of highlights of exhibits at the forthcoming PMMI show. Concentrating on the interests of those concerned with technical and operational packaging, these exhibits offer machinery in action, practical demonstrations for practical packaging people, and specialists qualified to answer questions manning the booths.

The Packaging Machinery Manufacturers Institute Show of 1959

Occupying 63,000 square feet on two complete floors of the New York Coliseum, some 155 exhibitors offer a wide range of machinery, materials, control, and service for packaging.

According to PMMI officials, the products displayed represent a market value more than $2 million, an exhibitor average of $22,772. They expect 20,000 visitors to attend the show.

Hours of the show are as follows:

November 17th: 10:00 a.m. to 6:00 p.m.

November 18th: 10:00 a.m. to 9:00 p.m.

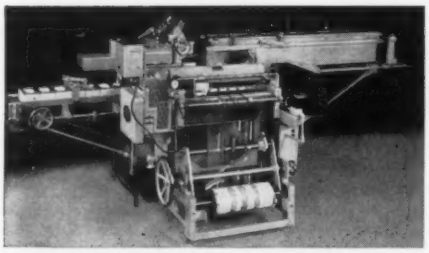
November 19th: 10:00 a.m. to 6:00 p.m.

November 20th: 9:00 a.m. to 1:00 p.m.

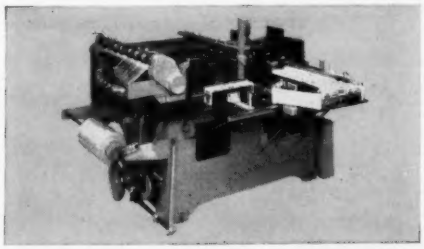
There is a registration fee of $2 a person, payable at the time of entering the Coliseum.

Opening one day earlier than the PMMI show, the 21st annual nation packaging forum of Packaging Institute will take place at the Statler-Hilton Hotel in New York. Details of the program of this year's PI forum appear on Page 63.

Readers dividing their time between the show and the forum should note that PI meetings and seminars start at 10:00 a.m. and 2:00 p.m. November 16th, 9:30 a.m. and 2:00 p.m. November 17th, and 9:30 a.m. November 18th. Luncheon each of these days is at 12:15 p.m. — all at the Statler-Hilton Hotel. (*Turn page*)



NOW YOU CAN HAVE TOMORROW'S OVER-WRAPPING MACHINE TODAY! Battle Creek's completely new Model 475 successfully handles more than 40 different formulations of soft plastic film . . . your assurance new plastic film developments will not outdate this machine. Change of films requires only electronic heat adjustment. Size changes are made in 15 minutes. Wraps up to 75 per minute within 5" to 12" lengths, 3" to 8½" widths and ¼" to 4" heights. Choose any of these films — polyethylene (medium, low and high density 1 mil and up), polystyrenes, heat sealing cellulose acetates, heat sealing foils, polyvinyl chlorides, cellophanes, polypropylenes or polymer coated films. **Battle Creek *"Continuous Flow"* Packaging Machines, Inc., Battle Creek, Michigan.**



REDUCE COSTS . . . PROTECT PRODUCTS . . . IMPROVE DISPLAYS . . . PROMOTE MULTIPLE SALES with Battle Creek's new Model 850 Automatic Bundler. This machine bundles groups of packages . . . 4, 6, 8, 12 and 24 to a bundle . . . at speeds up to 18 per minute. One operator can easily keep pace with a packaging line as high as 180 per minute. Depending on construction selected, the machine bundles with kraft paper, polyethylene, cellophane and other films; in bundles within 5" to 12" long, 4" to 10" wide and 1" to 8" high. Used for textiles, paper items, drugs, chemicals, cosmetics, food products . . . and/or what have you? **Battle Creek *"Continuous Flow"* Packaging Machines, Inc., Battle Creek, Michigan.**

On the following pages appears a "booth-by-booth" listing of exhibits. Many of these include machines and equipment being shown for the first time, and the majority of displays will be "action exhibits" showing how the machinery performs packaging operations on the spot.

A-B-C Packaging Machine Corp.
Booth: 315 **Hotel: Commodore**
Exhibiting its automatic top and bottom short-case sealer which handles cases ranging from a maximum of 20 in. long, 16 in. wide and 18 in. high, to a minimum of 8 in. long, 6 in. wide and 4 in. high.

Alford Package Machines, Inc.
Booth: 118
Exhibiting four models of its Minisealer carton end gluer for semiautomatic production capable of sealing 1,000 or more cartons/hr. with one operator.

Algene Marking Equipment Co.
Booth: 512
Exhibiting its flat box printer which acommodates box sizes up to 50x65 in. in the flat, and prints at speeds up to 3,500 boxes/hr. Also exhibiting its four-way printer which automatically imprints 1, 2, 3 or 4 sides of a box in the setup stage.

Aluminum Co. of America
Booth: 1008 **Hotel: Madison**
Exhibiting its machine to manufacture aluminum containers and its RK machine to apply three-piece Stericap closures for pharmaceuticals.

American Sterilizer Co.
Booth: 1117 **Hotel: St. Moritz**
Exhibiting its combination steam and gas sterilizer, its Cry-O-Therm sterilizer for sterilizing heat-sensitive or moisture-sensitive materials, its Spordex (bacterial spore strips), and its Dynaclave high-speed pressure-steam portable sterilizer, as well as its Square-Pak flasks and closures.

American Viscose Corp.
Booth: 1106 **Hotel: Essex House**
Exhibiting its various types of cellophane and typical products packaged with it, its cellulose bands, and will have a telephone operator to answer questions.

Ampoule Machine Co.
Booth: 421
Exhibiting two machines to produce disposable cartridges, primarily for dental, antibiotic and polio-type injectables. These include the Shields combination machine and the Shields filler-capper.

Amsco Packaging Machinery, Inc.
Booth: 1001
Exhibiting its Amscomatic packaging method that permits fine-line edge sealing of polyethylene-bagged packages and which has a newly-introduced perforator-slitter attachment that allows "easy-open" of the package by a user.

Anderson Bros. Manufacturing Co.
Booth: 210 **Hotel: Henry Hudson**
Exhibiting its model 5600 rotary filler and capper for packaging ½-, ⅝-, ¾- or 1-oz. paper or plastic nesting-type cups. Also exhibiting its 8-vane model 520 sanitary pump designed to pump 20 gal./100 r.p.m.

The Arabol Manufacturing Co.
Booth: 1108 **Hotel: Henry Hudson**
Exhibiting details of its Ara-Size coatings for paper and paperboard, for bottles and can carriers, folding cartons, corrugated boxes and single- and multiwall bags.

Arenco Machine Co., Inc.
Booth: 201
Exhibiting for the first time its VUF bag feeding and opening machine which controls the speed of a connected portioning machine for peak output, its A.T. 5 Arenco-Alite fully automatic powder compressing machine, vial filling machine for powders and granular products. Also exhibiting its Kipak filling and wrapping machine, and Kisab IMK automatic wrapping machine.

Atlas Vac-Machine Corp.
Booth: 704 **Hotel: Park Sheraton**
Exhibiting its automatic, in-line forming and sealing machine that produces blister-packaged items and which uses a pressure former. Also exhibiting its model A-14 automatic form-and-feed machine combined with its Bata Clicker using one operator to form and trim packages.

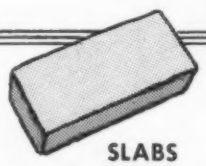
Avery Label Co.
Booth: 719 **Hotel: Manhattan**
Exhibiting its new Swiss-made Avery Eriprint Super imprinting machine for pressure-sensitive labels. Also exhibiting a new model of its Avery automatic labeler, as well as its line of pressure-sensitive polyester vinyl laminates.

Baltimore Biological Laboratory, Inc., Div. of Becton, Dickinson and Co.
Booth: 613 **Hotel: Statler-Hilton**
Exhibiting its pipetting machines for dispensing accurately measured volumes of fluids, especially for aseptic handling.

Barkley & Dexter Inc.
Booth: 105 **Hotel: Barbizon-Plaza**
Showing motion pictures and data of its work as consultants and development engineers in adapting existing equipment for special applications.

(Turn page)

Daily—on millions of packages!



PROXMELT®

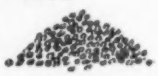
THE ORIGINAL HOT MELT ADHESIVE

SLABS for melt racks

CHUNKS for melt tanks

GROUND for hopper feed

GRADED for extrusion



EXTRUDED in reels

Now available in many forms as well as formulas to fit your particular machine. Seals to every kind of paper, film, foil, and fabric.

WRITE OR PHONE TODAY FOR FAST INFORMATION

Pyroxylin PRODUCTS, INC

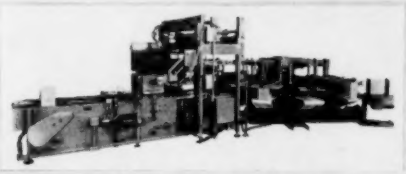
CHICAGO 32 Virginia 7-4800 PAOLI, PENNA. Niagara 4-4141

What?

Feed all these different sized cases, in random order, into one automatic case sealing installation?

Yes! It's being done. The Omnimatic-Rotopress automatically seals and discharges corrugated shipping containers of widely varying dimensions, fed to it in random order, at speeds up to 20 cases per minute. A choice of pre-set discharge patterns permits the simultaneous use of as many as five different Rotopress discharge stations, with sealed cases of different heights automatically discharged to separate take-away conveyors. Employing a unique circular compression unit, the entire installation occupies only 144.9 square feet, and permits random feeding of cases that may vary in length from 8″ to 30″ in width from 6″ to 22″ and in height from 6″ to 18″.

See our revolutionary OMNIMATIC-ROTOPRESS Booth 823, Nov. PMMI SHOW, New York Coliseum.



Packomatic Omnimatic-Rotopress operating at the General Electric Company's Trumbull Lamp Plant at Warren, Ohio.

WRITE for 8 page technical brochure giving complete design, application and dimension data. Request Packomatic Brochure 100-60.

Packomatic®
T.M. Reg. U.S. Pat. Off.

J. L. Ferguson Company
Box 1226 (Phone 6-6275)
Joliet 1, Illinois

Bartelt Engineering Co.
Booth: 317 **Hotel: Barbizon-Plaza**
Exhibiting its automatic packaging machine for the forming, filling and sealing of flexible packages. Also exhibiting its stand filler.

Battle Creek Packaging Machines, Inc.
Booth: 815
Exhibiting a ney polyethylene wrapping machine equipped with patented Thermo-Pad sealing system, with both endfold and underfold attachments, an easy-opening perforating device. Also exhibiting a wrapping machine running at 150/min., as well as its Flexopaker pouch packaging machine.

Bell-Mark Corp.
Booth: 103 **Hotel: Essex House**
Exhibiting its marking, coding and imprinting machines, including its new Electra Printa used for spotting imprints on a web or on individual products.

Bemis Bro. Bag Co.
Booth: 414
Exhibiting its new Auto-Mac multiwall bag feeding machine operating at 16 bags/min. and handling bags of 50 lb. and up.

Better Packages, Inc.
Booth: 827 **Hotel: Manhattan**
Exhibiting its 555 and other models of its electric series of automatic tape dispensers.

Bivans Corp.
Booth: 1109 **Hotel: Essex House**
Exhibiting its automatic cartoning machinery.

The Burnet Co.
Booth: 115
Exhibiting for the first time its H & K automatic two-piece capsule filler, its Triumph electronic counter model TB3 with an automatic bottle gating mechanism. Also exhibiting its Triumph unscrambling equipment and Rotax tablet-capsule counter.

John Burton Machine Corp.
Booth: 517 **Hotel: Henry Hudson**
Exhibiting its model 3-210 automatic Cellubander demonstrating (with a two-mandrel unit) application of bands to a small rigid plastic package.

Butler Automatic Machine Inc.
Booth: 1122
Exhibiting various models of its automatic web splicers—SU series for installation in limited space, SPL-25-A for high-speed machinery, and SPL-50 for packaging machines.

Cameron Machine Co.
Booth: 822
Exhibiting a model 620 slitting and roll winding machine equipped with differential wind attachment for polyethylene and other "high slip" films. Also exhibiting a model 400 foil separator furnished with shaftless unwind equipment capable of handling a 30-in. diameter roll.

Chain Belt Co.
Booth: 716
Exhibiting its A.S.A. standard roller chain, plate top roller chain, Chabelco steel roller chain, flex top chain, and table top conveyor chain in nylon and steel.

Chisholm-Ryder Co. of Pennsylvania
Booth: 930 **Hotel: Statler-Hilton**
Exhibiting for the first time a complete line of its semiautomatic and automatic liquid filling machines, as well as feed tables, disc accumulators and labeling machines.

C.I.T. Corp.
Booth: 715 **Hotel: Barbizon-Plaza**
Offering information and consultation on long-term financing geared to depreciation schedules in the purchasing of packaging machinery.

The Clark-Aiken Co.
Booth: 1210
Exhibiting its lift table and air table.

Clybourn Machine Corp.
Booth: 505 **Hotel: Henry Hudson**
Exhibiting for the first time its CMC carton filling and sealing machine combined with a net weight scale. Also exhibiting its intermittent motion Tuc-Pacs.

Arthur Colton Co.
Booth: 816 **Hotel: Hampshire House**
Exhibiting a new aerosol filling line of straight-line design for medium volume automatic production, and automatic machine for filling and heat sealing polyethylene tubes and a rotary unscrambler.

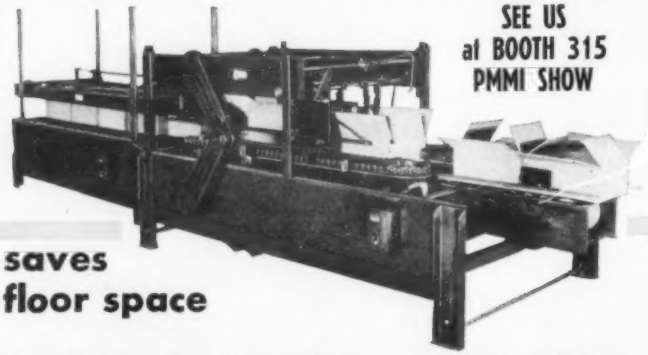
Conapac Corp.
Booth: 728-732 **Hotel: Park Sheraton**
Exhibiting its RotoWrap model 300 for vacuum-and-gas packaging of meats and cheeses, its RotoWrap model B unit packaging machine and its Formseal machine for automatic packaging in rigid plastic containers. Also exhibiting its Walgan M-20 for producing side-weld polyethylene bags.

Container Equipment Corp.
Booth: 1205 **Hotel: Essex House**
Exhibiting a Ceco model 40 two-station adjustable cartoner to handle a wide range of carton sizes.

Continental Can Co., Flexible Packaging Div.
Booth: 1116 **Hotel: Plaza**
Exhibiting its Zip-Cord machine to put draw cords in polyethylene bags, as well as blueprints of packaging machinery designed to handle polyethylene films.

Crompton & Knowles Corp.
Booth: 1019-23 **Hotel: Essex House**

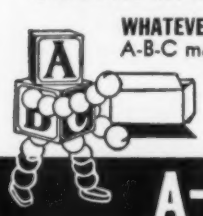
A-B-C Short Case Sealer



SEE US at BOOTH 315 PMMI SHOW

saves floor space

This A-B-C Short Case Sealer really increases packaging efficiency. Glues, folds and seals either or both top and bottom flaps in one operation—automatically. Speeds up to 30 cases a minute. Finest welded construction. Ball bearing construction reduces maintenance. Guaranteed not to get out of "time".



WHATEVER YOUR PACKAGING PROBLEM, there's a proved A-B-C machine to solve it—case sealers, unloaders and unscramblers, side sealers and hand gluers.

WRITE TODAY FOR DETAILS—
FLOOR PLANS & SPECS

A-B-C PACKAGING MACHINE CORP.
TARPON SPRINGS, FLORIDA

Exhibiting various models of its machines to overwrap a wide variety of products in all commercially available wrapping materials.

Dennison Manufacturing Co.
Booth: 1214 Hotel: Barbizon-Plaza
Exhibiting its Therimage machine demonstrating the Therimage process for decorating squeeze bottles. Also exhibiting machinery to apply Therimage labels to roll films.

Derby Sealers, Inc.
Booth: 214 Hotel: Park Sheraton
Exhibiting its full line of electrically- and hand-operated dispensers of tape and pressure-sensitive roll labels. Exhibiting for the first time its Dispens-A-Ply automatic product lalabels in roll form.

Dodge Fibers Corp.
Booth: 1026
Exhibiting a tear-resistant Teflon-coated glass fabric for use as belting on overwrap machinery, a pressure-sensitive Teflon glass fabric to line rails, chutes and hoppers of packaging machinery and for heat-seal bars as a release agent.

Doughboy Industries, Inc.
Booth: 1222 Hotel: Barbizon-Plaza
Exhibiting the new combination chain band glue-sealer, model CBS-G for making positive closures of heavy paper bags, and the chain bead sealer for sealing and then trimming excess film from bag tops.

E. I. du Pont de Nemours & Co.
Booth: 1227, 1229
Hotel:
Park Sheraton (Cel-O-Seal personnel)
Barbizon-Plaza (film group)
Exhibiting (at booth 1227) Cel-O-Seal cellulose bands for glass packaged products and (at booth 1229) 29 different types of film for use on machinery.

John Dusenbery Co., Inc.
Booth: 1110
Exhibiting its film slitter-rewinder, trim removal system, web tension indicator, and core cutters.

Economic Machinery Co.
Booth: 1000 Hotel: Statler-Hilton
Exhibiting a World Super C.M. labeler for front and back body labeling of polyethylene containers at 300/min. and a World Super C.M. labeler to apply front, back and wrap-around neck labels to ⅘-qt. bottles.

Electronic Machine Parts, Inc.
Booth: 220
Exhibiting its photo-electric registration control equipment for intermittent or continuous rotary machines involving localization, spot cutting or synchronization.

Elgin Manufacturing Co.
Booth: 1215 Hotel: Statler-Hilton
Exhibiting for the first time its new two-cylinder nonstop piston filler. Also exhibiting its model GSA automatic wrapping machine and model EZA semi-automatic wrapping machine.

Elliott Manufacturing Co.
Booth: 500 Hotel: Roosevelt
Exhibiting its Hi-speed 1960 fully automatic top-and-bottom case gluer and sealer, its standard small production line machine for Hand-Pak automatic gluing and sealing, and its 1960 Labeleer for labeling glass containers up to 180/min.

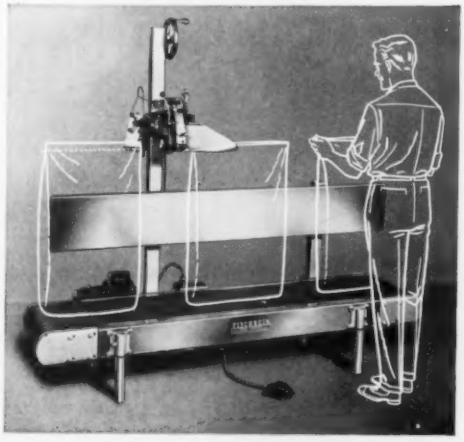
Emhart Manufacturing Co.
Booth: 411-415 Hotel: Henry Hudson
Exhibiting for the first time its SK-880 Casemaster integrated case opener, positioner, gluer sealer, packer for loading cartons or bags into corrugated cases.

The Exact Weight Scale Co.
Booth: 200
Exhibiting its model 1206 Selectrol automatic checkweighing machine for small products and packages up to 10 lb., its model 1250 Selectrol for case and bag checkweighing up to 200 lb., and a basic net weight classifier and automatic net weighing machine.

(Turn page)

FISCHBEIN® LOW COST EFFICIENT

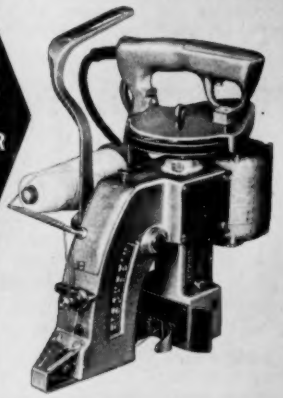
BAG CLOSING EQUIPMENT



AUTOMATIC MODEL BA-6

Bags start the sewing operation when they reach the head. After sewing, thread is cut automatically and conveyor belt continues to move bag. Instantaneous start/stop controls.

FISCHBEIN Portable BAG CLOSER MODEL C



FASEAL

TAPE BINDING ATTACHMENT

- Produces perfect tape-bound closures.
- Complete portability maintained.
- Can be quickly removed when tape-binding is not required.

- Total weight, only 10½ pounds.
- Requires no installation, supports or plant space . . . merely plug into any electrical outlet.
- Handles all textile and paper bags.
- Closes average 100 lb. bag in less than 6 seconds.

Write for complete Catalog File of Bag Closing Equipment.

DAVE FISCHBEIN CO.
2730 30th Ave. S., Dept. PE
Minneapolis, Minn., U.S.A

1,322 COLORS of paint are offered by every paint dealer featuring the Colorizer Paint Color System. Adding Colorants to the base paint is a quick, easy, clean job—thanks to Colorizer's tough new "Colorpods" of "Scotchpak" Heat-Sealable Polyester Film.

"SCOTCHPAK" TAKES OVER

...streamlines a multitude of packaging jobs!

Looking for a film that's *tough*, clear as glass—one you can freeze or boil? And would you like that same film to be heat-sealable with a seal that's as tough as the film itself? Then your answer is "Scotchpak."

Here is a film that combines the best features of many films. It can be heat-sealed in less than 2 seconds —a temperature of 300° to 400° F. and 20-60 psi is all that's required.

"Scotchpak" Film resists freezing cold (down to -70°F.) and boiling heat (up to 240°F.). It resists acids, oils, alkalies and organic solvents. It is light (saves shipping costs!) and compact (saves space in shipping and on the shelf, too!)

"Scotchpak" is now available in roll-stock widths up to 50 inches—from 2 mils to 4.5 mils thick, ready for printing—if you desire. It can be easily handled on conventional bag-making and filling equipment.

Our Customer Service organization is ready to work with you to show you how "Scotchpak" can solve your film fabrication and packaging problems. For complete information, write Film Products Group, Dept. CAS-119, 3M Company, St. Paul 6, Minnesota.

SCOTCHPAK BRAND
SCOTCHPAK BRAND
SCOTCHPAK BRAND
SCOTCHPAK BRAND
SCOTCHPAK BRAND
SCOTCHPAK BRAND
SCOTCHPAK BRAND
SCOTCHPAK BRAND
SCOTCHPAK® BRAND HEAT-SEALABLE POLYESTER FILM
SCOTCHPAK BRAND

"SCOTCHPAK" IS A REGISTERED TRADEMARK FOR THE HEAT-SEALABLE POLYESTER FILM OF 3M CO., ST. PAUL 6, MINN. EXPORT: 99 PARK AVE., NEW YORK 16. CANADA: LONDON, ONTARIO

MINNESOTA MINING AND MANUFACTURING COMPANY

...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

Felins Tying Machine Co.
Booth: 321 **Hotel: Henry Hudson**
Exhibiting three models of Pak Tyer tying machines for tying various sizes of bundles, boxes and other packages.

J. L. Ferguson Co.
Booth: 823 **Hotel: Essex House**
Exhibiting its new Omnimatic case gluer and Rotopress case sealer which accepts filled cases of varying dimensions in random order, and glues and seals these cases in an automatic operation.

Fife Manufacturing Co.
Booth: 740
Exhibiting the Fife Kamberoller automatic web guiding at intermittent points and the Fife Shifta-Roll Stand method of mounting an unwind roll to lateral shifting.

Dave Fischbein Co.
Booth: 102 **Hotel: Park Sheraton**
Exhibiting the new series BA bag closer which automatically closes paper bags at a rate of 30 ft./min.

Food Machinery and Chemical Corp.
Booth: 1001, 1005, 1007, 1011
Hotel: Park Sheraton

Hudson-Sharp Machine Co.
(see listing under Hudson-Sharp)
Simplex Plant
Exhibiting for the first time its model 210 side-weld bag making machine operating at speeds of 170 to 220 bags/min.

Stokes and Smith Plant
Exhibiting a new high-speed electronic checkweigher operating at speeds up to 400/min. with accuracies to ±¼ per cent of gross package weight. Also exhibiting its SIG automatic bag filling and sealing machine.

General Corrugated Machinery Co., Inc.
Booth: 316
Exhibiting its new case sealer-taper that automatically adjusts to any size case, closes top flaps, and tape seals top and bottom flaps at the same time.

General Electric Co.
Booth: 109
Exhibiting for the first time its new paper porosity detector (which uses an ultra-violet light source), and its CT-101 side register control for small-to-medium size sheeters, tubers, etc. Also exhibiting its photoelectric decoder.

General Packaging Equipment Co.
Booth: 723 **Hotel: Park Sheraton**
Exhibiting two automatic packagers, including its new General potato chip packager exhibited for the first time.

Gisholt Machine Co.
Booth: 1209 **Hotel: Salisbury**
Exhibiting its Sealamatic 85 to apply precut cellulose neck-band seals on glass under 3 in. diameter, at speeds up to 120 bottles/min. Also exhibiting its paper-collar applicator to 750 cartons/min.

Adolph Gottscho, Inc.
Booth: 712
Exhibiting various models of its Rolaprinter, wrapaprinter, Markacoder, and Rolacoder equipment for use with various packages and packaging materials, including wax paper overwraps, bottles and jars, and cartons.

Griffin-Rutgers, Inc.
Booth: 600
Exhibiting its Codedge machine which codes labels of any size or shape in packets up to 1,000 or more at a time, operating at a speed of 2,000 or more labels/min.

Hayssen Manufacturing Co.
Booth: 808
Exhibiting its new RT machine packaging various items in polyethylene, its model G Compak with a new automatic top labeling attachment, and a wrapping machine for textile and paper products—Wrapping in polyethylene.

Fr. Hesser Maschinenfabrik
Booth: 819 **Hotel: Barbizon-Plaza**
Exhibiting its automatic bag form-

For The **Right Size** Container Every Time . . .

Rite-Size BOX MACHINE

- *Eliminates* packing line slowdowns and shutdowns.
- *Converts* box storage areas into manufacturing space
- *Reduces* box inventory investment
- *Cuts* unit cost of packages

The Colt Rite-Size Box Machine is designed to make corrugated cartons *right in your own plant — as you need them.* It produces any size and style box you require, in small or large lots, quickly, accurately, and at lower cost! (A complete change in carton dimensions takes only a minute and one-half.)

With a Rite-Size Machine, box production can be coordinated with packing line requirements . . . to eliminate slowdowns and shutdowns due to carton shortages. Packaging is better, too, because cartons can be custom dimensioned to your products.

A complete box making department takes only 1600 square feet of space, *including storage.* Reductions in carton storage areas alone have resulted in floor space savings as high as 90% in many plants!

RITE-SIZE Box Machine is fully automatic and requires no special knowledge to run. Only one operator is necessary. Machine turns out 300 to 500 box blanks per hour.

Investigate the advantages of "in-plant" box making, today. There's no obligation. Write, phone, or wire for complete details.

COLT **PACKAGING MACHINERY COMPANY** 53 WASHINGTON AVENUE, CRANSTON 7, R. I.

ing, filling and sealing machine for packaging 5 lb. of flour, operating at speeds of 50 to 55 bags/min.

Hi-Speed Checkweigher Co., Inc.
Booth: 515 **Hotel: Taft**
Exhibiting its model A-57 Hi-speed checkweigher and metal detector combination, its PA-57 Hi-Speed pouch checkweigher, its T-59 tube Hi-Speed checkweigher, and its new can-seam testing machine.

Allen Hollander Co., Inc.
Booth: 113
Exhibiting its pressure-sensitive, heat-seal, water-activated gummed, and ungummed labels with and without marginal or control punch-feed holes, for use with various units of labeling machines.

Horix Manufacturing Co.
Booth: 1111 **Hotel: Statler-Hilton**
Exhibiting for the first time its pressure filler for aerosol cans, using air, nitrogen, carbon dioxide, or other noncorrosive, nonexplosive gas. Also exhibiting a new walking-beam cooling unit operating in connection with the pressure filler.

Hudson-Sharp Machine Co.
Booth: 1005 **Hotel: Park Sheraton**
Exhibiting the new high-speed polyethylene Campbell wrapper to handle single- or multi-unit packages with or without stiffeners at speeds of 150 or more/min.

Huntingdon Industries, Inc.
Booth: 217 **Hotel: Henry Hudson**
Exhibiting its traymaker to automatically hopper-feed, glue and form corrugated blanks into trays or telescope boxes at speeds to 50/min. Also exhibiting photos and details of its Porter partition assembler, its Huntingdon "36" assembler, "24" chip assembler, form-packer, and box maker.

Industrial Marking Equipment Co., Inc.
Booth: 101
Exhibiting for the first time its FlexoPrinter to print on a production line basis, on multiwall bags or cartons of any size. Also its Rainbow coding attachment for imprinting on polyethylene, cellophane, waxed paper, glassine, foil, etc.

The Inta-Roto Machine Co., Inc.
Booth: 1208 **Hotel: Wellington**
Exhibiting its GM-1000 combination laminator.

Island Equipment Corp.
Booth: 809
Exhibiting its Styl-O-Matic bottle conveyor, Walkie-Pushie unscrambler, carton unloader, powered twister, rotary accumulator, lateral-curve bottle conveyor, multi-tier unloader and straight-line unscrambler.

Ivers-Lee Co.
Booth: 508 **Hotel: Statler-Hilton**
Offering in its booth facilities for a meeting place serving the pharmaceutical industry.

R. A. Jones & Co., Inc.
Booth: 1015 **Hotel: Manhattan**
Exhibiting for the first time its Plasti Lok machine to feed a flat die-cut Polyflex blank, fold it into a tray and lock its corners, at speeds to 100 trays/min. Also exhibiting its constant-motion vertical cartoner and its fully automatic model CMC-300 cartoner.

Kartridg-Pak Co.
Booth: 1218
Exhibiting its KP-1000 self-contained, semiautomatic aerosol packaging line, producing up to 600 cans/hr. and using a piston filler, vacuum crimper and pressure filler.

Kidder Press Co., Inc.
Booth: 104
Exhibiting photographs and details of its letterpress, flexographic and gravure presses, slitters and rewinders.

The Karl Kiefer Machine Co.
Booth: 420 **Hotel: St. Moritz**
Exhibiting various models of its lachine, two fillers, one with its new pin-point filling stem and the other with its submerged filling stems for filling foamy products.

Labelette Co.
Booth: 711 **Hotel: Park Sheraton**
Exhibiting various models of its labeling equipment, including its model 11B labeler incorporating for the first time the electronic label feeder.

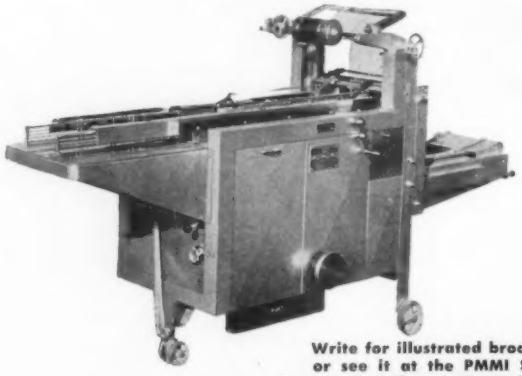
The Lakso Co., Inc.
Booth: 400 **Hotel: Essex House**
Exhibiting its new electronic counter for counting and filling tablets and capsules regardless of shape or size; its model 52 automatic cottoner, operating at speeds up to 100 bottles/min., and its model 56 inspection machine for examining tablets and capsules.

Long and Co., Inc.
Booth: 1204 **Hotel: Barbizon-Plaza**
Exhibiting its fully automatic labeling machine for cylindrical containers, the Atlantic labeler model 4-A. Also exhibiting its semiautomatic Atlantic labeler to handle containers ranging from several oz. to 5 gal. Also exhibiting the Atlantic labeler 6-P to put die-cut labels on gal. cans with ears.

Lynch Corp.
Booth: 916 **Hotel: Plaza**
Exhibiting its new model BW, model BK, Robo-Wrap machine and a stretch pack machine.

Machinery Service Co., Inc.
Booth: 1000
Exhibiting for the first time its portable vacuum filler (semiautomatic) with air cleaning attachment. Also exhibiting its feeder-cleaner.

AUTOMATIC
Fully and Easily Adjustable
WRAPPING MACHINE



Write for illustrated brochure, or see it at the PMMI Show, New York Coliseum, November 17-20 Booth 826

Here is an automatic wrapping machine that is fully adjustable in a minute's time to various package sizes by merely turning a crank. No tools or change parts required. The Schooler Wrapmaster handles cellophane, wax or foil, and makes the sealing seam along the longitudinal edge of the carton, giving two full top and bottom display panels.

Optional accessories include electric eye for printed overwrap material.

SCHOOLER MFG. CO. **P. O. Box 65 Pacoima, California**

Marathon, a Div. of American Can Co.
Booth: 731 **Hotel: Essex House**
Exhibiting its new Tux carton and the machine which loads, closes and seals it, at speeds of 10 to 50 cartons/min. Also exhibiting details of Marathon's various package manufacturing services, and materials and packages produced.

Markem Machine Co.
Booth: 1114 **Hotel: Barbizon-Plaza**
Exhibiting its industrial marking machines.

Marsh Stencil Machine Co.
Booth: 1125 **Hotel: Park Sheraton**
Exhibiting its electric Twin-Taper using a preselection system in dispensing two lengths of tape as preset for any two lengths from 3 to 72 in.

Martin Engineering Co.
Booth: 706 **Hotel: Henry Hudson**
Exhibiting its Vibrolator vibration inducer, electric and pneumatic ball type, silent—for movement, compaction or sifting of materials, parts, slurries or concretions. Also exhibiting vibration accessories and a new model CCVP-3000 hopper car shaker.

Mercury Heat Sealing Equipment Co.
Booth: 612 **Hotel: St. Moritz**
Exhibiting for the first time its low-boy Verti-Pak with scales, for packaging, weighing, filling and sealing nut meats. Also exhibiting its new VLS-12 label sealer equipped to hole punch, date code, price imprint, label and eject a bag automatically.

Merrill Machinery Sales Co.
Booth: 108 **Hotel: Essex House**
Exhibiting for the first time its model CP-42 capsule polishing and inspecting machine. Also exhibiting its model 72-16a tablet counting machine.

Miller Hydro Co.
Booth: 314 **Hotel: St. Moritz**
Exhibiting its new high-speed case and carton packer for packing all sizes and shapes of bottles, flasks, jars, and cans.

Miller Wrapping & Sealing Machine Co.
Booth: 1001 **Hotel: Mayflower**
Exhibiting its Corley-Miller model MPS wrapping machine for wrapping a variety of package sizes in heat-sealable or glue-sealable materials. Also exhibiting Corley-Miller model KW-16 Kwik-Wrap sheeter for sheeting a variety of films and foils in connection with hand wrapping.

Milprint, Inc.
Booth: 304
Exhibiting new types of packaging applications and new developments in laminations and extrusions among other packages.

Morningstar-Paisley Inc.
Booth: 1123 **Hotel: Savoy-Hilton**
Exhibiting details of its complete line of adhesives for packaging operations.

MRM Co., Inc.
Booth: 204
Exhibiting its model CM fully automatic labeling machine for containers from 1 oz. to 1 gal., up to 150 containers/min., its fully automatic vacuum gravity rotary filling machine for free-flowing, semiviscous and foaming liquids, up to 1 gal., and its semiautomatic gravity and vacuum filling machines.

National Equipment Co.
Booth: 216
Exhibiting its Short-A-Matic case sealer, Rose 5 IST wrapping machine, Speed-Wrap and Chaffee Rotor-Sealer.

National Starch and Chemical Corp.
Booth: 1200 **Hotel: Statler-Hilton**
Exhibiting its newest adhesives for package forming and sealing, high speed bottle labeling, and its new extrusion system for granular hot melts.

New Jersey Machine Corp.
Booth: 1107 **Hotel: Essex House**
Exhibiting its Poly LabelDRI with electric-eye roll label feed and label code imprinter. Also exhibiting its capping station for its Pony Express automatic labeler, capping and labeling at speeds to 65 bottles/min.

Olin Mathieson Chemical Corp., Film Div.
Featuring a Message Center in the registration area of the Coliseum to take telehone and other messages and deliver them to all visitors and exhibitors at the show. It will have a Dow-Jones news ticker.

Oliver Machinery Co.
Booth: 1014 **Hotel: Henry Hudson**
Exhibiting for the first time its 809 polyethylene wrapper. Also exhibiting its 804 package top labeler with 809 rotary imprinter, and its 806 label imprinter, cut-stacker with rotary imprinter and rewind attachment.

OlsenMark Corp.
Booth: 520
Exhibiting its Kensol roll leaf stamping equipment and OlsenMark roll leaf, used for marking and decorating plastic and nonplastic containers. Also exhibiting its Kensol 15T Power-Pack for code marking, prepricing, and lot numbering.

Package Machinery Co.
Booth: 805 **Hotel: Barbizon-Plaza**
Exhibiting its new Transwrap TWS-75 automatic bag forming, filling and sealing machine, its new Forgrove model 85 high-speed (500/

Wrightronic® Checkweigher

New, electronic unit automatically gross weighs each package at speeds up to 150 per minute with extreme accuracy, and . . .

1. Signals by flashing light whether the package is overweight, on weight, or underweight.
2. Registers a running visual count of the exact number of packages in each weight classification.
3. Rejects any package outside the plus or minus limits.

Descriptive literature available upon request.

WRIGHT MACHINERY COMPANY
DIVISION OF SPERRY RAND CORPORATION
DURHAM, NORTH CAROLINA

min.) twist wrapping machine, and its model U-6 machine for overwrapping cartons.

Packer Machinery Corp.
Booth: 120
Exhibiting for the first time its model PVA machine and PJ-1 machine. PVA is a fully automatic straight-line vacuum liquid filler, and the PJ-1 is a semiautomatic machine for containers no larger than 1 qt.

Pak-Rapid Inc.
Booth: 1027
Exhibiting for the first time a Pak-Rapid tray conveyor packaging machine redesigned to double its previous hourly production. Operating on intermittent- or continuous-motion principles.

Pamarco Inc.
Booth: 215
Exhibiting its Evenflo engraved applicator rolls, embossing rolls, gravure cylinders, Micro-Lok demountable plate cylinders and integral rolls.

Paper Convetring Machine Co.
Booth: 511 **Hotel: Commodore**
Exhibiting details of its latest developments in flexographic and rubber plate letterpress units.

Paper Machinery & Research, Inc.
Booth: 215
Exhibiting its engraved rolls, plate cylinders, demountable plate cylinders, gravure base cylinders, and photo-engraving, chrome and copper plated cylinders and cores, as well as embossing rolls.

Peters Machinery Co.
Booth: 303 **Hotel: Statler-Hilton**
Exhibiting for the first time its new carton and tray gluing and forming machine operating at 60 to 70/min. and featuring a closed glue system. Also exhibiting its high-speed SG tray and carton forming machine, its CCY closing machine and UD cellophane sheeting and stacking machine.

Pneumatic Scale Corp., Ltd.
Booth: 307 **Hotel: Park-Sheraton**
Exhibiting its Pneumaclean air cleaning machine, its 16-head all-purpose rotary filler, a 6-head Pneumacap with escalator lift, a Colletta bench-type labeler, Carbert unscramber unit and Carbert model 60 plastic tube filler and sealer, and its plastic container feeder which feeds from bulk load.

Popper & Sons, Inc.
Booth: 1119
Exhibiting its PerfeKtum liquid filler model VR-520Q, and other units of high-speed liquid fillers, washing equipment, automatic plugging machine, and tablet and capsule counting equipment.

For any Stenciling or Marking on

Corrugated Boxes • Wood • Metal • Paper • Concrete • Fiber • Fabric • Painted • Plastered • Glass • Stone or any other porous or non-porous surface

Specify

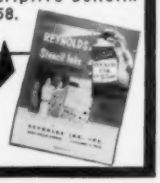
REYNOLDS INK

QUICK DRYING — WATERPROOF

9 Colors—Each packaged in the handy easy-to-use 12 oz. Aerosol Container

Stenciling, color coding and identification marking have now become clean, quick and easy. Container sprays a dense, compact cone of specially formulated ink at the touch of a finger. Ink is very opaque. Dries in seconds. No smear, smudge or curtaining. Not to be confused with slow drying paints, lacquers and enamels. Easy to store. Always ready to use. No cans to open; no pots or brushes to load. No drying out, no waste, no mess. Saves time. Specify Reynolds,—the original, proven best ink **for any marking.** A trial will convince you!

GET FULL DETAILS! Write Today for Fully Descriptive Bulletin No. 58.



REYNOLDS INK, Inc.

4536 EUCLID AVE. • CLEVELAND 3, OHIO

Potdevin Machine Co.
Booth: 926 **Hotel: Park Sheraton**
Exhibiting its hot melt three-roll coating and waxing machine for one- or two-side coating or laminating, its SE-100 hot melt extruder for bag seams, and its type Z 27-in. gluing machine, type LM 6-in. label paster, and other units.

Print-A-Tube Co.
Booth: 509
Exhibiting for the first time a fully automatic skin packaging machine. Also exhibiting various boilable packages, including polyethylene on polyester and polyethylene foil combinations, as well as skin packaging films.

F. B. Redington Co.
Booth: 922 **Hotel: Park-Sheraton**
Exhibiting for the first time its type 9N vertical, adjustable cartoning machine. Also exhibiting its Automax cycle cartoner and a fully automatic type 23 tube cartoner.

Resina Automatic Machinery Co., Inc.
Booth: 203 **Hotel: Park-Sheraton**
Exhibiting a fully automatic line, including a model CIS innersealer and a RS screw capper running at speeds up to 60/min. Also exhibiting a line using a model SA fitment applicator and a RU-120 screw capper running at speeds of 100 to 200/min.

Reynolds Metals Co.
Booth: 404
Exhibiting fully automatic, semiautomatic, neumatic and hand-closing equipment for applying aluminum foil tuckwraps and plug lids to aluminum containers. Also exhibiting aluminum foil overwraps, labels, pouches and containers.

Riegel Paper Corp.
Booth: 1211 **Hotel: Statler-Hilton**
Exhibiting its flexible packaging materials and its folding cartons and products of its bleached board made from its newest facilities.

Robertson Paper Box Co., Inc.
Booth: 116 **Hotel: Essex House**
Exhibiting its new Quik Form carton forming machine to handle one-piece boxes with hinge covers and two-piece telescoping boxes at speeds of 1,000/hr., uses blanks precoated with thermo-setting adhesive.

Saga Packaging Machinery Div.
Booth: 736 **Hotel: St. Moritz**
Exhibiting for the first time its model FS-22 Saga machine for filling and crimping metal collapsible tubes. Also exhibiting high-frequency polyvinylchloride collapsible-tube sealing equipment and its HS-2 hand sealer for plastic tubes.

Scandia Packaging Machinery Co.
Booth: 1022
Exhibiting its new model 508 semi-

automatic wrapping machine for extra large size packages at speeds to 45/min., its model 107 automatic wrapping and bundling machine, a new collator handling up to 60 collations/min., and its new high-speed turret-type automatic wrapping machine model 711.

G. T. Schjeldahl Co.
Booth: 504 **Hotel: St. Moritz**
Exhibiting its new 41-in. side-weld polyethylene bag machine model S-16T, capable of running two separate webs simultaneously. Also exhibiting various attachments and components for bag machinery, including a multiple rotary perforator and a newly-improved ventilating hole-punching attachment.

Schooler Manufacturing Co.
Booth: 826
Exhibiting automatic (with automatic indexer incorporated) and semi-automatic wrapping machines and a new automatic bander.

Schroeder Machines Corp.
Booth: 403 **Hotel: Park Sheraton**
Exhibiting its automatic Quadnumatic combination to open and form corrugated cases, accumulate the product, inject the load into the case, and glue, seal and deliver the finished case. Also exhibiting its Duo-Formnumatic equipment to automatically open and form corrugated cases up to 30/min.

Shopsin Paper Co.
Booth: 603
Exhibiting for the first time its Super Mirror foil, backed to various weights of paper tag and carton board. Also exhibiting silver, gold and colored foils combined to gummed and ungummed paper backings in all weights.

St. Regis Paper Co.
Booth: 605, 609
Exhibiting its 254-B baler for semi-rigid containers, and its Sta-Lox carton erecting and carton closing equipment handling from 90 to 250 Sta-Lox cartons/min.

Stanford Engineering Co.
Booth: 119 **Hotel: Taft**
Exhibiting for the first time its heavy-duty turret unwind for handling rolls of paper, foil and board. Also exhibiting web guides, rewinders, unwinds and rewinds.

Sundstrand-American Broach, Div. of Sundstrand Corp.
Booth: Sundstrand-Packmaster 720
Brown Filling Machine 318
Hotel: Barbizon-Plaza
Brown Filling Machine exhibiting its liquid Multipak Packeter and a multiple Formapak machine, and Brown Vibracount feeders and counters.

Sundstrand-Packmaster exhibited for the first time its model 58 thermoforming blister machine, model 50-A new automatic pouch packaging machine, and model 56 cohesive spot-seal packaging machine.

Swift & Co.
Booth: 308 **Hotel: Park Sheraton**
Exhibiting new packaging adhesives for canning, including resin lap end pastes, hot pick-up gums, as well as high-speed water-resistant case sealing, and easy-open case sealing adhesives. Also exhibiting high-speed resins for packaging machinery and resistance laminating adhesives.

Tompkins' Label Service
Booth: 608 **Hotel: Barbizon-Plaza**
Exhibiting pressure-sensitive, heat seal, bag headers, greaseproof inserts, gummed and ungummed labels on various packages. Also exhibiting its new Pres-To-Mark marking machine for imprinting of labels in one operation.

Triangle Package Machinery Co.
Booth: 1120 **Hotel: Commodore**
Exhibiting a two-scale semiautomatic net weigher equipped with a new type auxiliary feed, an automatic bag former, filler, sealer operating on polyethylene film, and an automatic bag former, filler, sealer equipped with three net weighing scales.

(Turn page)

The **SEALTITE SYNCHROMATIC**

Produces a BETTER PACKAGE from a Standard Paper Bag at Big Savings

Write for Complete Information

CONSOLIDATED PACKAGING MACHINERY CORP.
BUFFALO 13, N.Y.

Union Bag-Camp Paper Corp.
Booth: 408 **Hotel: Savoy-Hilton**
Exhibiting for the first time a random case sealer. Also exhibiting a sewing head for multiwall bags and an automatic unit for baling 1-lb. coffee packages with paper bags.

Union Paste Co.
Booth: 1223 **Hotel: Park Sheraton**
Exhibiting two new adhesives for cellophane bag manufacture, a foil laminating adhesive, and a line of high-gloss scuff-resistant paper and board coatings.

United Shoe Machinery Corp.
Booth: 600 **Hotel: Barbizon-Plaza**
Exhibiting applicators for its Thermogrip adhesives, including a new system for multiwall bag closing, a new multi-pack can cartoning machine, as well as different formulations of adhesives and accessories to the system.

U. S. Automatic Box Machinery Co., Inc.
Booth: 1104 **Hotel: Plaza**
Exhibiting its new model C-24 cartoning machine designed to package hard candies into ¼- and ½-lb. cartons, at a running speed of 60/min.

U. S. Bottlers Machinery Co.
Booth: 1100 **Hotel: Essex House**
Exhibiting its model DS-12 Sanitair rotary air cleaner and the new container feeder.

Vertrod Corp.
Booth: 700 **Hotel: Essex House**
Exhibiting hand, foot pedal, pneumatic and electromagnetic powered impulse sealers and trim sealers, as well as new high-speed trim sealers with scrap blow-off devices, and drum liner sealers. Exhibiting for the first time sealers to make seals up to 72 in. long of 0.002- to 0.010-in. polyethylene.

Walton Laboratories, Inc.
Booth: 1101
Exhibiting its moisture conditioning systems and its Walton web wetters.

Warner Electric Brake & Clutch Co.
Booth: 701
Exhibiting a new spline drive armature design suited to clutch-coupling and brake application where shock loading or vibration loading offer problems. Also exhibiting its Electro-Sheave, a packaged electric clutch and sheave assembly for direct installation on standard NEMA electric motor shafts.

H. G. Weber & Co., Inc.
Booth: 208 **Hotel: St. Moritz**
Exhibiting a newly-designed flying splice unwind roll stand and two differential pressure web edge sensing units, its DPS-41 and DPS-42, the latter capable of sensing two webs at the same time.

Wolverine Paper Converting Machinery Corp.
Booth: 100 **Hotel: Henry Hudson**
Exhibiting photos and details of its various units of equipment, including its Wolverine Cub-Line and Wolverine Cub-Printer.

The Woodman Co., Inc.
Booth: 310 **Hotel: Park Sheraton**
Exhibiting its new Fleet Weigh model Ds and Air Weigh Pac, automatic former, filler and sealer, as well as its rotary Pak Off and its Econo-Weigh model B table model single-scale net weigher.

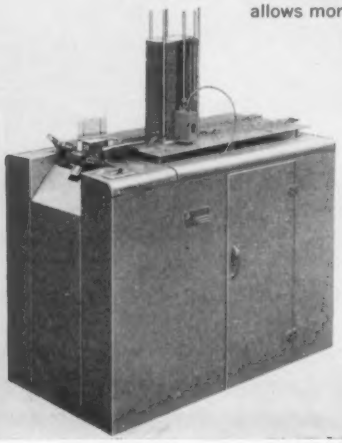
Wrap-Ade Machine Co., Inc.
Booth: 826
Exhibiting its model UPTR hand-fed transfer-roll-type machine for parts, its model UPC conveyor-style machine for baked goods, and its model UPH tablet machine with photo registry both sides of package. Also exhibiting its semiautomatic head sealers, including its model J pneumatic sealer.

Wright Machinery Co.
Booth: 211 **Hotel: Manhattan**
Exhibiting its new advanced Bagmaster system for forming, weighing, filling and sealing pillow-type bags using single- or double-walled stock, making bags from 2½ to 8 in. wide and 3 to 14 in. long at speeds up to 50/min. (End)

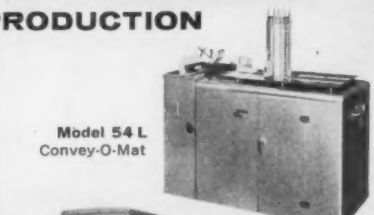
TUCK-O-MAT LINE *by...* BIVANS

FOR SHORT RUNS OR CONTINUOUS PRODUCTION

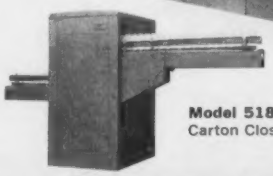
The TUCK-O-MAT Model 50 is a reliable, general purpose carton set-up machine... a real workhorse of the cartoning line. Hundreds of installations prove that it offers more versatility, handles a wider range of carton sizes, allows more adaptations... all at speeds up to 75 cartons per minute.



BIVANS will out-perform, out-last any comparable equipment on the market today. Write today for complete details or a demonstration.



Model 54 L
Convey-O-Mat



Model 518 L
Carton Closer

Call our distributor today to see a Bivans installation near your own plant.

BIVANS CORPORATION

2431 Dallas Street, Los Angeles 31, California

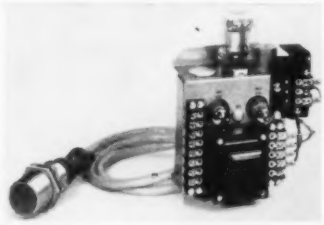
Distributed by: New Jersey Machine Corp., Hoboken, Cincinnati, Chicago, Los Angeles

Announcements of machinery and products

1. Beneath each announcement is a code number. As you select items on which you want more information, *note* this number.
2. Now, *circle* the corresponding numbers on the postcard, Page 107.
3. Next, *fill* in your name and address.
4. Then, *mail* the card — we pay the postage.

Missing Can Detector

Automatic Timing and Controls, Inc. introduces a new sensing system which detects the absence of



a metal container from a closed and sealed pack moving at high speed on a conveyor. Two proximity limit switches (which detect ferro-magnetic materials without light beams, mechanical linkage or physical contact) and a control relay make up the system that detects a missing container from a six-can pack. Sensor heads of limit switches are mounted in tandem for a null balance that is disturbed only by the absence of a container from either line. If a container is missing, null balance is destroyed, thus creating a signal that triggers the control relay. Signal to relay can be used to actuate a reject system which will automatically remove unfilled pack from conveyor, or it can stop conveyor to permit manual removal of unfilled pack. Circle No. 1.

Film For Overwrapping

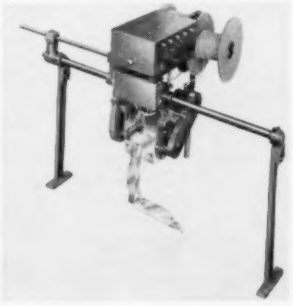
Chippewa Plastics Co. announces its development of a new series of polyethylene films, the OW-20 series, designed for general overwrap applications. The new films have overcome deficiencies of earlier materials for overwrap use. Sealing characteristics are satisfactory, and the films have the required stiffness and machinability for efficient packaging, Chippewa says. Circle No. 2.

Paper Coating Resins

U. S. Industrial Chemicals Co. has developed three new polyethylene paper coating resins—"Petrothene" 200-2, 201-2, and 203-2. All are improved in adhesion and draw-down characteristics, as well as a reduction in neck-in, smoking, coating temperatures and polymer build-up at the die. They have been extruded onto a variety of substrates—including paper, paperboard, foil, cellophane, and others. "Petrothene" 200-2 has a melt index of 3.0, density of 0.915, and recommended coating weight of 20 lb./3,000 sq. ft. and higher; 201-2 has melt index of 5.0, density of 0.915, and recommended coating weight of 10 to 25 lb./3,000 sq. ft.; 203-2 has melt index of 8.0, density of 0.915, and recommended coating weight of 3 to 15 lb./3,000 sq. ft. Circle No. 3.

Adhesive Applicator

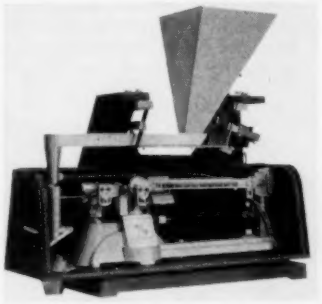
United Shoe Machinery Corp. announces its nozzle-type "Thermogrip" applicator model BN, mak-



ing bonding of wider seams and multiples seams at increased web speeds possible. It simultaneously feeds the cord-like "Thermogrip" adhesive from two reels, applying up to ½ lb./min. depending on formulation. This is equal to 1,300 linear ft./min. of seam ¼ in. wide and 0.0035 mil thick, United Shoe says. Drive for unit is taken from base machine through a special drive pack to a sprocket on end of top shaft. Model BN applies adhesive to metallic foils and polyethylene film coatings and laminations, and many other materials. Circle No. 4.

Weighing Circuit

Glengarry Processes Inc. announces the availability of its "Mini-Weigh" for weighing small



quantities of dry materials. Four basic elements of unit are—supply hopper, electric vibratory feeder, weigh bucket mounted on the weigh beam (which is shock mounted to avoid vibration) and small air cylinder for operating the bucket gate. Features of "Mini-Weigh" are: weighing range of 1 to 100 gm.; up to 15 weighings/min.; accuracy of $\pm 1/10$ gm. of most materials; controls are mounted in a remote control box; fully automatic; can be synchronized with other machines; stainless steel contact parts. Circle No. 5.

Moisture Spray Tester

Gaynes Engineering Co. offers its moisture spray tester, #MST-366, with a complete circulating system for continuous water flow. In testing, water travels into storage reservoir and is pumped up to atomizer-type spray nozzles. Circulating pump system, with proper filters, relief bypass, gauges, regulating valves and controls, furnishes proper amount of liquid/sq. ft., per hr. Unit has cabinet 3x6x10 ft. Circle No. 6.

Induction Heater

Radio Frequency Co., Inc. has developed an induction heater operating at 120 mc. Previous frequency limit of practical com-

Stop costly overweights and save on packaging labor with the right model of Gump Packaging Equipment. Speedy, highly accurate Bar-Nun "Auto-Check" and Edtbauer-Duplex Weighers (illustrated) for manual lines. Automatic Bar-Nun Bag Packaging Equipment, and Can, Jar or Carton Lines save on packaging labor as well as product. Extremely dependable operation—accuracy guaranteed.

Choose equipment to suit the job. Write for recommendations, without obligation. Tell us the material, weight, container, and production requirements.

B. F. GUMP CO.
1346 S. Cicero Ave., Chicago 50, Ill.
Circle No. 265 on Card, Page 107

Good news for users of tape

Here's the latest idea in sealing cartons... the DIAL-TAPER. You dial the length of tape and the DIAL-TAPER does the rest automatically ... measures tape accurately, moistens tape with warm water and cuts off clean.

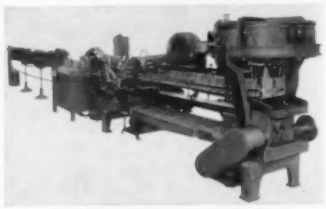
Users report "up to 50% saving in TIME, 25% saving in TAPE, plus stronger, neater package. Tape sticks tight with one pass of the hands." Used by U. S. Government, Ford, General Electric, all types of business.

For free booklet DT-5 write to Marsh Stencil Machine Company, Belleville 34-A, Illinois. T-23

mercial induction heaters has been about 10 mc. Used in conjunction with a special RFC output fixture, it rapidly heats highly resistive conductors such as silicon, boron and titanium boride, RFC says. It can also function as a dielectric heater of nonconductive materials. In such an application, machine seals polyethylene at rate of ¼ sec./seal. Available in 1 kw., 5 kw. and larger, machine offers localization of heat, ease of adaptability to production line use, and a work coil which requires no water cooling. Circle No. 7.

Carton Filling System

Food Machinery and Chemical Corp., Stokes and Smith Plant, introduces its new automatic carton



filling and sealing system for improved filling accuracy for products with varying densities. Machine combines volumetric filing with a "built-in" electronic checkweigher equipped to feed back data. High-speed filling is accomplished by mechanical, telescoping pockets arranged on the perimeter of a revolving filling head. As empty, bottom-sealed cartons are moved into position, a measured amount of product is discharged. Checkweigher, incorporated into machine, automatically weighs every carton after it is filled. Package weights are collected and averages fed back to rotating filling head to adjust amount of fill as changes in density occur. Extreme overweight and underweight cartons are rejected from line before seals are firmly set in drying conveyor. Cartons can be handled from 2⅜ in. wide by 3⅝ in. high up to 8x11 in. Circle No. 8.

Rub Proofness Tester

Testing Machines, Inc. announces the availability of a new testing machine to measure the rub proofness of print on paper and board, developed by PATRA (Printing, Packaging and Allied Trades Research Association of Great Britain). It also measures transfer of color from printed or coated materials during rubbing (rubfastness) and the abrasion resistance of many plastic materials. It has two discs which rotate in plane contact at the same angular speed, and pressure between discs is controlled by a dead weight on upper disc. Circle No. 9.

Rigid Foil Containers

Cochran Continental Container Corp. introduces a new rigid foil container. The No. 459 container

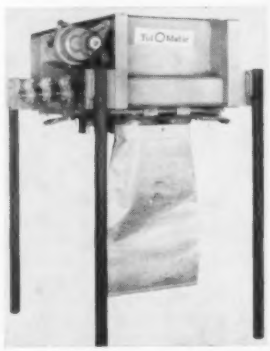
measures 8¾ x 5¾ in. top-out, with a slant depth of 1$\frac{5}{32}$ in. It is made of .0035-in. aluminum foil and will be supplied with a curled rim at top of container wall, especially designed for cellophane or polyethylene overwrapping. Circle No. 10.

One-Way Bottles

Owens-Illinois Glass Co. has introduced a new line of one-way bottles with stippled surfaces, and a "No-Deposit No-Return" legend in blown-in lettering. Available in 10-, 12-, 16-, 24-, 28- and 32-oz. sizes, bottles range in weight from 6 oz. for 10-oz. size, to 18 oz. for qt. size, and in height from 6¾ in. to 9¾ in. Lighter weights are made possible by height reductions and improved design. New bottles should require relatively minor equipment changes in the majority of bottling plants, O-I says. Circle No. 11.

Automatic Baler

Tol-O-Matic, Inc. has introduced its series 50-100 baler that automatically loads sacks of flour or



similar products into paper baler bags or burlap shipping sacks. Operated by one man with no lifting, machine shapes filled bag so that it slides firmly into shipping bag. Length requirement of shipping bag may be reduced. Machine

NEW DESIGNS IN MARLEX

New 22-ounce Armour Chiffon detergent containers made of MARLEX* show tremendous sales increase over metal cans!

The big news in household products packaging today is the switch from metal and glass to containers made of rigid polyethylene. In addition to being lighter in weight, these plastic bottles cannot rust to leave unsightly rings on shelves and porcelain surfaces. They do not dent . . . will not nick porcelain, won't chip dishes or glassware, if accidentally dropped. And—very important—they can be designed in a wide variety of attractive and functional shapes, with the color molded in.

Like other leading detergent manufacturers, Armour and Company recognizes the many advantages of bottles blow-molded from MARLEX 5000 Series Detergent Grade Resin. MARLEX offers superior stress cracking resistance, longer shelf life, and greater stiffness and strength per mil of wall thickness.

MARLEX 5000 Series Resin is so chemical-resistant and impermeable that it is being widely evaluated for use as a container material for such hard-to-hold household products as laundry detergents, disinfectants, bleaches and toiletries, as well as waxes, polishes and cleaning agents.

In fact, no other type of material serves so well and so economically in so many different applications. How can MARLEX serve you?

*MARLEX is a trademark for Phillips family of olefin polymers.

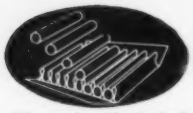
PHILLIPS CHEMICAL COMPANY, Bartlesville, Oklahoma, A subsidiary of Phillips Petroleum Company

PLASTICS DIVISION OFFICES

NEW ENGLAND	NEW YORK	AKRON	CHICAGO	WESTERN	SOUTHERN	EXPORT
322 Waterman Avenue East Providence 14, R. I. GEneva 4-7600	80 Broadway, Suite 4300 New York 5, N. Y. Digby 4-3480	318 Water Street Akron 8, Ohio FRanklin 6-4126	111 S. York Street Elmhurst, Ill. TErrace 4-6600	317 N. Lake Ave: Pasadena 1, Calif. MUrray 1-6997	6010 Sherry Lane Dallas 25, Texas EMerson 8-1358	80 Broadway, Suite 2800, New York 5, N.Y. Digby 4-3480

MARLEX® Phillips 66 A PHILLIPS 66 PLASTIC

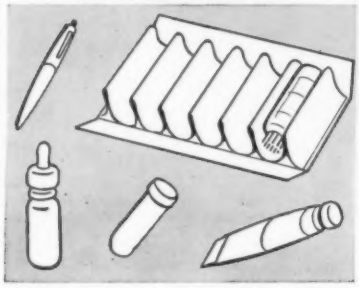
For more information circle No. 267 on Reader Service Card. Page 107



RONDO

"the pack with the built-in shock absorber"

HOLDS and PROTECTS SMALL DELICATE OBJECTS



RONDO is a packing system comprised of trays with fluted partitions which hold inserted objects by a spring-clip action. Typical applications for medical vials, electronic components, pens, crayons, tubes, various tools, etc.

RONDO IS A PAPER PRODUCT, SOLD AT PAPER PRICES

Holds objects from 5/16" to 1¼" in diameter

RONDO OF AMERICA
INCORPORATED
100P Sanford St., Hamden 14, Conn.
Circle No. 268 on Card, Page 107

WHIZ-LIFTER
MATERIALS HANDLING EQUIPMENT

Give your product a lift with a

WHIZ-LIFTER

MATERIALS ELEVATING MACHINE — Assures speedy, automatic bulk product elevating into hopper of a weighing or filling machine without danger of spillage or breakage! Will handle drugs, hardware, pharmaceuticals, plastics, chemicals, etc., with trouble-free efficiency.

Write for literature

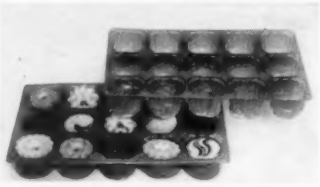
FRAZIER & SON
20-01 INDUSTRIAL WEST, ALLWOOD
CLIFTON, NEW JERSEY
Designers and manufacturers of • Volumetric and Net Weighing Machines • Parts Handling Equipment • Rotary Filling Machines • Conveying & Elevating Equipment

Visit us at booth 1001, PMMI Show

is pneumatically controlled and readily adjustable for different sizes of bags and bales. Circle No. 12.

Vacuum Formed Plastic Tray

National Packaging Corp. is now manufacturing a new, multiple-unit plastic tray that is vacuum



formed from almost any type of plastic film. "Pak-Appeal" trays consist of individual pockets especially designed to fit various sizes and shapes of products. Each design is created for a specific product and is designed to fit snugly inside its outside containers. "Pak-Appeal" trays feature "built in" cushioning design inherent in vacuum forming. Circle No. 13.

Short-Run Marking Unit

Markem Machine Co. announces its model 135A manually-operated unit for short run marking.

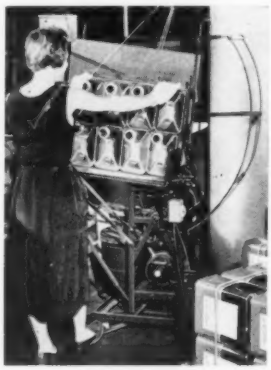
It uses same printing elements as larger Markem equipment and can be a supplement to high production units. Model 135A will mark flat, curved and irregular surfaces of parts, packages or labels—using direct or offset process—with imprints up to 2x3 in. Objects up to 1½ in. thick can be marked direct, and up to 4½ in. thick by offset. Markem rubber plates or zinc etchings may be used when imprint changes are infrequent; Markem "Masterplates" are preferable when all or part of imprint must be changed. Circle No. 14.

Print Smoothness Tester

Diamond National Corp.'s Gardner Div. has developed a print smoothness tester, a machine to accurately predict the printability of paperboard. Essentially it is a bench model gravure press with special design features for testing paperboard. Tester provides a numerical smoothness rating by counting dot misses through the use of a specially-designed template, which, Gardner says, eliminates problems of subjective judgment. Advantages are—ink film remains constant for series of prints without need for adding makeup ink, and pressure is obtained by spring or air loading rather than by clearance. Circle No. 15.

Can Tying Machine

B. H. Bunn Co. has devised a new twine tying machine that ties up to 12 5-gal. cans at one time.



The 30-in. wide waist-high table accommodates two rows of cans with six cans in each row. Machine ties smaller bundles or smaller cans without adjustment of machine or twine tension, and it automatically adapts to varying sizes and shapes. Cans are stacked on table, and as operator steps on foot trip, revolving arm carrying twine circles the stack three times, keeping the right amount of tension on twine to insure secure wrap. At end of third revolution, knotter automatically knots twine in double-loop, nonslip knot, and cutting knife cuts twine close to knot. Tying operation takes less than 3 sec. Circle No. 16.

Teflon-Impregnated Belts

General Plastics Corp. has developed endless belts made of "Teflon"-impregnated glass fabric, suitable for conveyors. Belts, which can be used for heat sealing applications, are available to order in widths up to 50 in. For most applications, 0.010-in. thick fabric is satisfactory. Belts can be put over existing ones for added strength. Etching on riding surface provides better traction between drive pulley and belt. Circle No. 17.

(Turn page)

DOW

Plastiatrics

DOW'S CLINICAL APPROACH TO HEALTHY PLASTICS APPLICATION

in packaging

HOW DOW TAILORS LINEAR POLYETHYLENE TO SPECIFIC REQUIREMENTS OF BLOWN BOTTLE USERS

The introduction of high density (linear) polyethylene to the package-goods industry as a new type of packaging material provides manufacturers of many kinds of products with definite marketing advantages over conventional containers. However, each application requires careful study and selection of the correct formulation for both optimum package performance and ease of fabrication on available equipment.

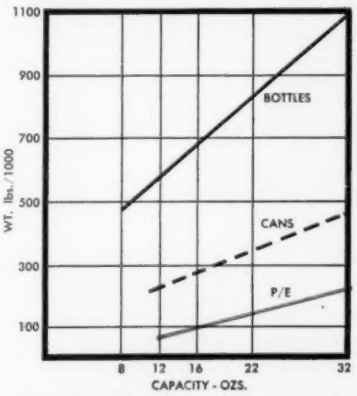
As a prelude to Dow's present volume production of high density polyethylene, much experimental and development work was done by Dow chemists and plastics engineers to determine the most effective areas and methods of application of various high density polyethylene formulations to present types of commercial and consumer products.

For example, typical laboratory data has shown that filled rigid containers made of high density polyethylene and contained in corrugated boxes have a drop rejection height of nearly 4 ft. A fall from this height will not damage the filled plastic bottles. In comparison, filled containers made of conventional materials and similarly boxed showed appreciable damage from drops of more than 24 inches in repeated tests. This advantage of high shock resistance is welcomed by makers of such items as liquid household cleaning products—detergents, bleaches, ammonia, etc.

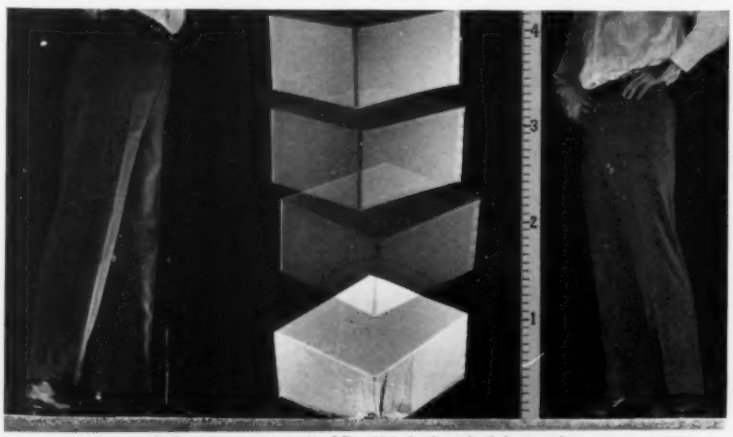
Possible variations in container shapes and colors are virtually unlimited with high density polyethylene providing great versatility in container design. This advantage may prove highly important in marketing and merchandising of products which must compete against essentially identical formulations. A new, unusual or more conveniently shaped container is often one highly effective answer to the problem of gaining a greater share of the market.

One immediate advantage to high density polyethylene containers is a weight advantage, compared to glass and metal. The chart (right) is a comparative study of relative weights of the three materials. Blown glass bottles are the heaviest of the three in any given size, followed by metal, with high density polyethylene the lightest. The differences in weight between containers of any one size also reflect differences in shipping costs. The greatest savings obviously will accrue from the use of high density polyethylene bottles, other factors being equal.

In a continuing Plastiatrics study of the most effective applications of both high density rigid and intermediate density (squeeze-bottle type) polyethylene, Dow Plastics Technical Service Engineers are working directly with container fabricators as well as with end-users. Dow's past experience in rigid plastic packaging, and its facilities for testing and tailoring a given material, will be fully utilized in its linear polyethylene developments. Manufacturers and end-users of containers are invited to consult with Dow on container problems, and on the possible use of intermediate density or the new high density polyethylene for the packaging of their products. Contact your nearest Dow Sales Office or write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. 2174DH11.



All other factors being equal, lighter weight of high density polyethylene containers reduces shipping costs, compared to glass and metal.



Packaged containers made of Dow high density polyethylene survive drop tests from twice the height permissible with glass or metal.

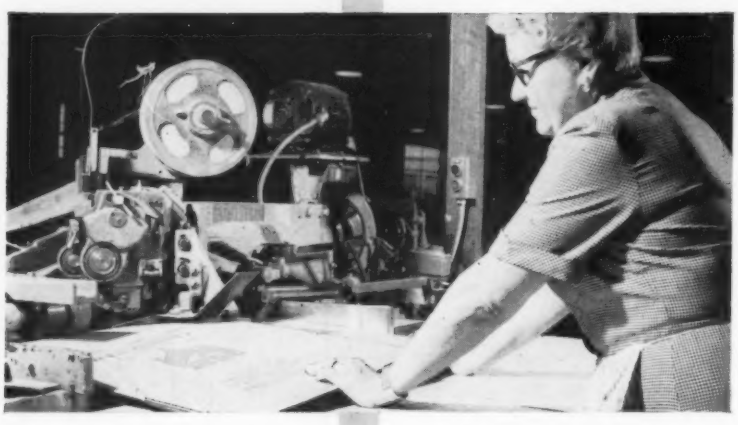
AMERICA'S FIRST FAMILY OF THERMOPLASTICS

Styron*
Zerlon*
Ethocel*
Tyril*
Polyethylene
PVC Resins
Pelaspan*
Saran

*Trademark

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

MID-STATES
packaging wire to meet modern requirements



MID-STATES STITCHING WIRE

gives you frictionless, uniformly smooth flow off the coil and through the stitching head to assure high-speed, uinterrupted operation. Available in 5, 10, 25 and 50-lb. coils. All standard gauges. Special gauges on request. Galvanized and copper-coated finishes.

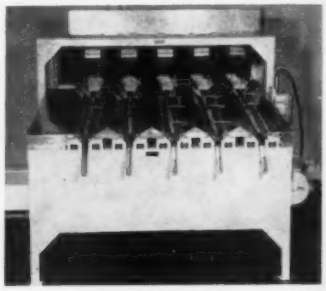
ALSO wires for a wide variety of uses such as tying, baling, binding, stapling, et cetera. A complete line of cost-savers to meet every packaging requirement. Write today for further deatils, samples and prices.

MS SW MID-STATES STEEL & WIRE COMPANY

MID-STATES STEEL & WIRE COMPANY
CRAWFORDSVILLE, INDIANA · JACKSONVILLE, FLORIDA

Precision Sorter

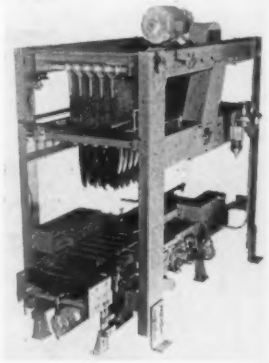
U. S. Engineering Co. announces the development of its multiple sorting machine for high-speed



sorting of tablets, capsules and similar items, in increments of $\frac{1}{1000}$ in. or more at rates of 7,000 to 12,000 pieces/min., depending on size and shape. Machine has a large bulk hopper to receive product, and five vibratory feeders to feed product at controlled rate onto the sorting rollers. Rollers have adjustable taper so product can be sorted for any desired dimension within rate range of machine. Machine also has two take-away conveyors, one to receive and discharge under-sized product, other to receive and discharge product within acceptable range. Circle No. 18.

Case Packer

Emhart Manufacturing Co.'s Portland Div. has designed a new packer with a "piggy-back" ar-



rangement of case feed, and a container loading mechanism. Type 860 AA will load cans or bottles and can be adjusted for use with two, three or four lanes. Cycling at rate of up to 25 cases/min., it will pack full- or half-depth solid fibre, corrugated or plastic cases, with or without partitions or carry-home cartons. Loading of containers is cushioned by case being raised on platform to receive load and minimize

For more information circle No. 271 on Reader Service Card, Page 107
Circle No. 272 on Card, Page 107

WRAPAK

WRAPAK is a modest packaging investment that pays immediate dividends to the manufacturer, the distributor and the retailer in many product lines.

Dividend to the manufacturer: WRAPAK automatic packaging machinery wraps filled containers (cans, cartons or bottles—glass, metal and plastic) of your product with WRAPAK cartons at the high speeds demanded by today's production schedules. In many applications, the WRAPAK system uses substantially less material than is used in conventional partitions and master packers.

Dividend to the distributor: WRAPAK cartons save time in handling and price marking—time and material in reshipment of less than case lots to retail customers.

Dividend to the retailer: WRAPAK makes retail stocking, price marking, and selling easier, more efficient and less costly.

Container Corporation has combined the best qualities of packaging structure, machinery and visual design into the WRAPAK system . . . Let this unique system help make the distribution of your product a more profitable operation—all the way. Write or call for further information.

CCA

CONTAINER CORPORATION OF AMERICA

Valley Forge Marketing Center • 5000 Flat Rock Road • Philadelphia 27, Pennsylvania

FOLDING CARTONS • SHIPPING CONTAINERS • SEFTON FIBRE CANS • PLASTIC PACKAGING

MULTIPLE DIVIDEND

Please send me the new brochure on the WRAPAK system.

We manufacture _____

NAME _____

COMPANY _____

ADDRESS _____

DEPT. _____

when you pack and ship SOFT GOODS

It's quicker to bag soft goods than wrap them. You save on packing and handling costs. Your product is safer, too. More satisfied customers; fewer damage claims.

The towels shown here are hand folded, mechanically compressed and pushed into paper bag by a plunger. Label covers air-escape vent at bottom. It also acts as dustproof seal—assures factory-fresh delivery; locks out dirt during storage.

Today, thousands of different products are shipped in convenient, low-cost paper bags. See how you can save on materials, handling, freight and warehousing. Write for your free copy of Booklet CP-1.

union camp

Commercial Packaging

UNION BAG-CAMP PAPER

CORPORATION

233 BROADWAY, NEW YORK 7, N. Y.

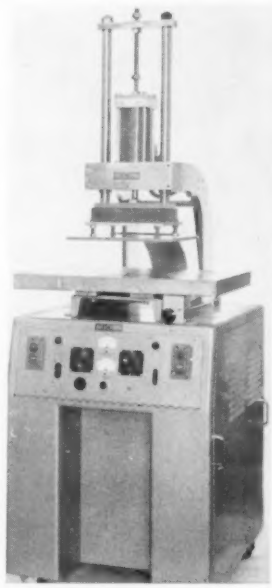
"drop," and by the "give" of the air-actuated platform. Machine features simplified grid and reduction in moving parts over previous models. High-speed type 840 case feed, which feeds in same or opposite direction to container flow, is located immediately under loading mechanism. Circle No. 19.

Replacement Hot-Plate

J. B. Dove and Sons, Inc. is now manufacturing a new remote-controlled electro-sealer replacement hot plate, the 5F-6R. It has a 6x6-in. convex bronze sealing plate set in a 10x12-in. heavy gauge stainless steel frame, and is constructed for mounting on any standard 6x9-in. hot-plate opening, with the frame covering any worn edges on table-top opening. Control box contains indicator light, on-off switch, and electrical outlets to insure efficient operation. Circle No. 20.

High Frequency Heat Sealing Equipment

Plastic Welding Corp. announces its type SP heavy-duty heat sealing unit, available in 4-, 6-, or



8-kw. models. The generator applies power to electrodes which are held in a press. Electrodes must be flat and apply even pressure. Heat is generated in the plastic. Some features are—continuous duty cycle, 15-sec. heat cycle timer, 15-sec. dwell timer, 20x30 in. bed plate, 3½-in. cylinder diameter, 7-in. press daylight, 7-in. press stroke, 30x33-in. floor space required. Circle No. 21. (End)

ACCURATE FILL!

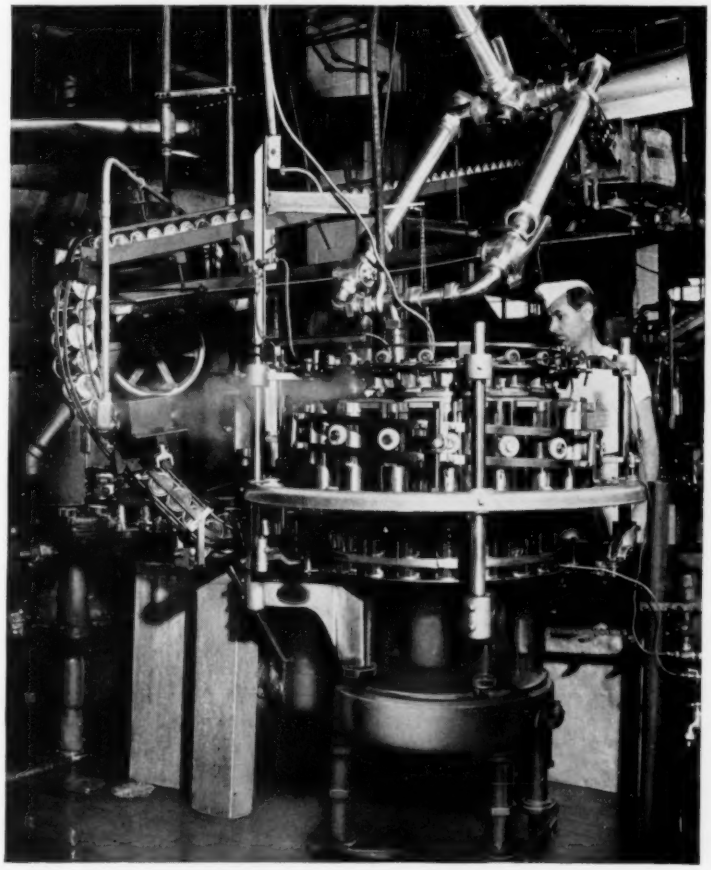
Hershey packs chocolate syrup with a Votator® FILLER

TO HELP adhere to its strict standards of plant cleanliness and efficiency, Hershey Chocolate Corporation recently selected a VOTATOR* Piston Type Filler for packaging of chocolate syrup. Results reported: Fill is more uniform; spillage has been reduced; higher standards and speeds are maintained on a continuous filling schedule.

In deciding on the VOTATOR Filler, Hershey's Laboratory, Engineering and Production Departments studied all types carefully and chose it because, "We thought the VOTATOR Filler would do the best job for us." It is now doing just that.

Why not investigate VOTATOR Fillers for *your* product. See how it can boost filling speed, improve accuracy of fill, reduce spillage. A FULL PRODUCTION RANGE, 6 THROUGH 36 STATIONS. Write for Bulletin PED 260.

VOTATOR—Reg. U. S. Pat. Off.



Hershey packs chocolate syrup in 16-ounce cans at a rate of 300 cpm—18,000 cph with this 18-station VOTATOR *Piston Type Filler.*

Votator®
CONTINUOUS PROCESS EQUIPMENT AND SYSTEMS

GIRDLER PROCESS EQUIPMENT DIVISION
CHEMETRON CORPORATION
LOUISVILLE, 1, KENTUCKY
Louisville • New York • Chicago • San Francisco • Marietta, Georgia

CHEMETRON

Industry literature available free

1. Beneath each announcement is a code number. As you select items on which you want more information, *note* this number.
2. Now, *circle* the corresponding numbers on the postcard, opposite this page.
3. Next, *fill* in your name and address.
4. Then, *mail* the card — we pay the postage.

Pails And Drums

Vulcan Containers, Inc. offers an information sheet illustrating its line of steel pails and drums, with capacity ranges of 1 to 12 gal. These containers are available from stock in lined or plain interiors, in a variety of gauges. They are equipped with pouring spouts for both drum and lug styles of cover. Circle No. **101.**

Engineer's Checklist

Riegel Paper Corp. has a packaging engineer's checklist for the selection of flexible packaging materials. This list not only covers 21 points which a packaging engineer must check, but also has an enumeration of simplified explanations of factors that arise in material selection. Circle No. **102.**

Cellulose Wadding

Personal Products Corp., Cel-Fibe Div., offers an index file brochure describing "Cel-Fibe," a cellulose wadding material. Research and manufacturing techniques behind this material are described in detail and numerous examples of its application in protective packaging are listed. Designed to protect against shock, absorb leakage, and insulate against temperature changes, it meets many federal and military specifications. A descriptive table of 7 different grades is included. Circle No. **103.**

Impact Recorders

The Impact-O-Graph Corp. has a 4-page bulletin that describes various models of its impact, acceleration, and gravity recorders. These instruments are small in size and lightweight. They record data permanently on a special wax-coated recording tape. Machines are designed to record shocks, impacts, and vibrations from any direction. A list of specifications and other features of various models is included. Circle No. **104.**

Plastic Vials

Lermer Plastics, Inc. has an illustrated data sheet listing various sizes of its stock line of plastic transparent vials. Available in minimum quantities of 1,000, types include threaded vials with metal screw caps, shoulder vials with polyethylene slip-on caps, or shell vials with polyethylene plug closures. Sizes range from ½x2 to 1x4 in. Circle No. **105.**

Stapling Tools

Bostitch has published an illustrated 8-page brochure which describes 50 stapling tools for the shipping room. These units perform a variety of fastening jobs such as assembling, top sealing and bottom sealing corrugated boxes, sealing light- and heavyweight bags, attaching liners, padding, and covering. Circle No. **106.**

Labeling Information

Economic Machinery Co. is offering a 16-page booklet, "Labeling lines," giving suggestions for more successful labeling. The six subjects covered are: application of foil labels, factors influencing successful labeling, adhesives, size and shape of wrap-around and neck labels, plant layout and better bottling and labeling. Circle No. **107.**

Plastic Bottle Materials

Hercules Powder Co. has a brochure, "The plastic bottle comes of age," which analyzes the relative advantages of high-density polyethylene and polypropylene plastic bottles compared with glass and metal containers. A point by point list of physical and chemical characteristics is given as well as a forecast of potential markets for these containers. Circle No. **108.**

Polyethylene Bags

The Visking Corp. has a folder, "It's not the price of the bag," which enumerates nine factors to be considered in determining the actual cost of printed polyethylene bags. Circle No. **109.**

Box Closure Methods

Acme Steel Co. has a booklet, "Guide to better closures," specially prepared for users of fibreboard boxes and packages. It contains information on closure methods such as hand and machine gluing, taping, stapling, and wire stitching. A special section on regulations for sealing fibreboard containers is included. Circle No. **110.**

Collapsible Metal Tubes

A. H. Wirz, Inc. has a manual devoted to proper selection and use of fold-up metal tubes. This 32-page handbook includes data on such specifications as tube size, openings, closures and liners. Selector charts serve as guides in determining the compatability of various products with such tube metals as aluminum, tin, lead, and special alloys. Circle No. **111.**

Moistureproof/Greaseproof Papers

Paterson Parchment Paper Co. offers a data sheet on a series of plastic-coated parchments identified as No. 27-33-T. Combining a high-gloss finish, crease resistance, moisture protection, and wet strength, this paper is available in plain or printed form. It can be used as general purpose wrapper for foods containing both moisture and fats, as printed outer or plain inner liner for spirally-wound tubes used for packaging foods or industrial products containing oils, as wrapper for protecting oiled metal parts against moisture, and as carton liner for packaging moisture-sensitive products. Sample included. Circle No. **112.**

Polyethylene-Blend Coatings

Semet-Solvay Petrochemical Div., Allied Chemical Corp., has available Bulletin P/S 234, listing advantages of A-C polyethylene, an inert, low-molecular weight polymer, which can readily be blended with waxes, polymers, and resins in hot-melt or water emulsifiable grades. When added to wax coating, it improves gloss, reduces scuffing, and imparts a high blocking point, Semet-Solvay says. Checklist of product applications is included. Circle No. **113.**

Bond Tester

B. F. Perkins & Son, Inc. has literature and operating instructions on its Perkins-Southwick bond tester, an adhesion tester for resin coatings. The producer says this unit accurately measures the degree of adhesion between air-impervious coatings and paper. It determines the degree of adherence of the air-impervious coating or ply to the porous or semiporous base. Circle No. **114.**

Coatings For Packaging

Pyroxylin Products has a catalog giving specifications and properties of coatings for paper, paperboard, foil, and film used in packaging and converting. In the index, 88 different uses are listed. Circle No. **115.**

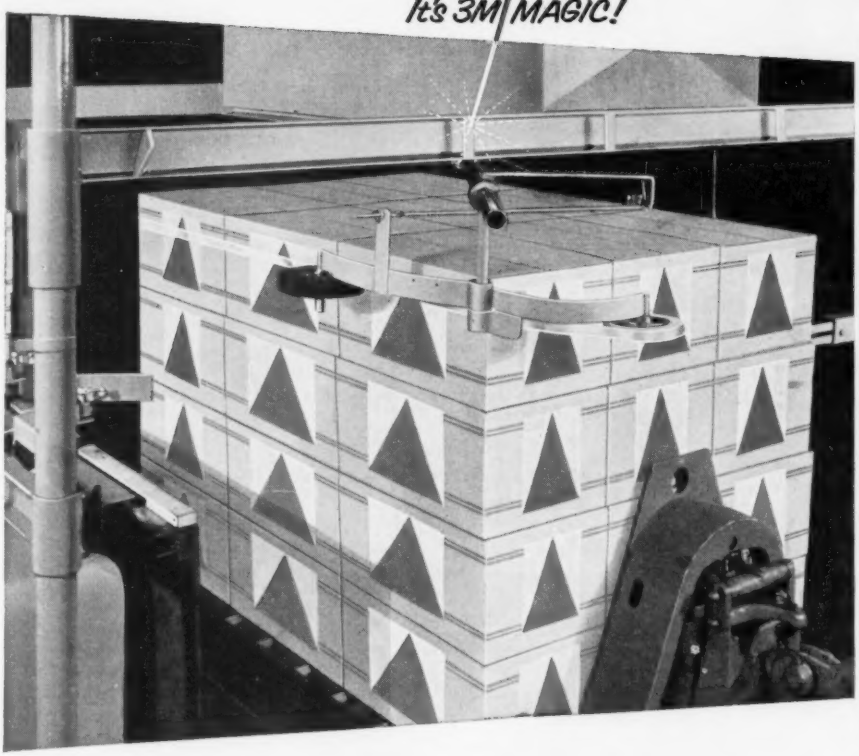
Molded Pulp Packaging

Keyes Fibre Co. lists the advantages of molded pulp shapes for interior packaging in a 4-page brochure. Custom molded into varying shapes, this material provides contoured partitions that protect against shock and are adaptable to packaging of fragile products such as fruits, glassware, electrical parts, fluorescent tubes, meters, and so on. Circle No. **116.**

Flexible Packages

Western Waxide Div., Crown Zellerbach Corp., has published an 8-page brochure giving data and illustrations on several of its developments, including "Crown Polypak," a dispensing type package for free-flowing vegetables; "Crown Poly" cook-in-pak, a boilable package, and "Crown Poly" pak-in-carton, a heat sealable pouch in a carton. Circle No. **117.**

It's 3M MAGIC!



SCOTCH BRAND SCOTCH BRAND SCOTCH BRAND SCOTCH BRAND SCOTCH BRAND SCOTCH BRAND SCOTCH BRAND SCOTCH BRAND SCOTCH BRAND SCOTCH BRAND SCOTCH® BRAND SCOTCH BRAND

TAPEnology takes over stack unitizing for new automatic Pallet Loader

A new automatic Pallet Loader, developed by Lathrop-Paulson Co., Chicago, now permits stacking and palletizing of shipping cases and cartons at a rate of 15-30 per minute. What's more, it also automatically unitizes the top layer of each pallet with a single band of super-strong "SCOTCH" Brand Filament Tape...thus assuring maximum load stability without the necessity of interlocking the stack pattern.

Tight-holding "SCOTCH" Brand Filament Tape sticks at a touch; unwinds easily for automatic application; holds firmly with a strength of up to 500 lbs. per inch of tape width. And tape won't cut into or damage cartons; is easily disposed of when no longer needed.

What do you ship? "SCOTCH" Brand Filament Tape offers dozens of time- and cost-saving shortcuts in holding, bundling, carton reinforcing and unitizing. Chances are, 3M Customer Engineering Service can show you how to utilize "3M-MATIC" Taping and Dispensing methods to get the economies of machine application. Ask your "SCOTCH" Brand Tape Distributor for information, or write: 3M Co., 900 Bush Ave., St. Paul 6, Minn., Dept. IAK-119.

When tape costs so little, why take less than "SCOTCH" Brand?

MEMBER Packaging Institute

Packaging Institute's
21st Annual
National Packaging Forum
Nov. 16, 17, 18, 1959
Statler Hotel
New York, N.Y.

"SCOTCH" is a registered trademark for the pressure-sensitive adhesive tapes of 3M Co., St. Paul 6, Minn. Export: 99 Park Ave., New York 16. Canada: London, Ontario.

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

Frankfurters and beer go well together. However, ball bearings and tobacco or sausage and candy are strange partners. But, all of these products — along with hundreds of others — have at least one thing in common — they're all packaged by Crompton & Knowles Packaging equipment.

Yes, today in hundreds upon hundreds of food, beverage and industrial plants, Crompton & Knowles automatic packing and wrapping equipment plays a vital role in production operations. In one plant you might see a Model CKDW-4 automatically wrapping popcorn bricks; in another plant a CKF is wrapping frankfurters as fast as girls can feed the franks into the line; in still a third plant a Crompton & Knowles line of can and case handling equipment is packing beer cans in cases and sealing the cases.

No matter where you go on the American industrial scene you'll find Crompton & Knowles packaging applications. The companies represented here are both large and small and represent an interesting cross-section of industry. They've all learned that Crompton & Knowles Packaging Corp. is a key source of supply. They've learned especially, that Crompton & Knowles equipment is *dependable equipment*, with *efficient servicing* as near as the telephone.

Find out now how Crompton & Knowles can serve you — how Crompton & Knowles equipment can help solve your automatic wrapping and packing problems. Contact your nearest Crompton & Knowles field engineer or write directly to Holyoke.

CROMPTON & KNOWLES C&K PACKAGING CORPORATION

CROMPTON & KNOWLES PACKAGING CORPORATION, HOLYOKE, MASSACHUSETTS
NATIONAL SALES & SERVICE: Atlanta • Cleveland • Los Angeles • Berkeley, Calif. • Seattle • Chicago
New York • Winter Haven, Fla. • Ogden, Utah • Montreal • Toronto

Circle No. 276 on Card, Page 107

Packed with Quality

Among the hundreds of companies being served by Crompton & Knowles Packaging are those represented here:

AMERICAN LACE PAPER COMPANY
BEAUDRY BROTHERS CANDY CO.
DIAMOND-GARDNER CORPORATION (Foodtainer-Plate Division)
ERVING PAPER MILLS
THE FAFNIR BEARING COMPANY
GEORGE W. HELME COMPANY
GEO. A. HORMEL & CO.
HYGRADE FOOD PRODUCTS CORPORATION
INTERCHEMICAL CORPORATION (A & W Carbon & Ribbon Division)
KEYES FIBRE COMPANY
THE KROGER CO.
LUDEN'S INCORPORATED
MARLIN-ROCKWELL CORPORATION
MINNESOTA MINING AND MANUFACTURING COMPANY
MOBIL OIL COMPANY, INC.
PESCHKE SAUSAGE CO., INC.
THE PROCTOR & GAMBLE COMPANY
SANITARY PRODUCTS CORP. OF AMERICA
MISS SAYLOR'S CHOCOLATES INC.
JOS. SCHLITZ BREWING COMPANY
SOLO CUP COMPANY
SUTHERLAND PAPER COMPANY
THE TORRINGTON COMPANY
WHITE CLOVER DAIRY COMPANY, INC.

C & K Packaging can help you—find out how. Your nearby C & K field engineer is as close as your telephone. Or contact us at Holyoke.

CROMPTON & KNOWLES C&K PACKAGING CORPORATION

Holyoke, Massachusetts

Be sure to visit us at the PMMI show Nov. 17-20 at the New York Coliseum Booths 1019 through 1023

Wrapping Machines

Oliver Machinery Co. offers Bulletin No. 550815 describing its automatic wrapping machines. These units wrap a variety of articles of rectangular or irregular shapes such as cakes, cookies, candy bars, frozen foods, dried fruits, textiles, and so on. They can overwrap cartons, trays, U-boards, and flat cards; or the product may be wrapped without any support. These machines handle waxed paper, glassine, cellophane, or almost any other heat-sealable material. This folder also describes a label imprinter and package-top labeler that handles thermoplastic labels. Circle No. **132.**

Fibre Cans

R. C. Can Co. offers an 8-page catalog with specifications and illustrations of its line of convolutely- and spirally-wound fibre cans, available in square, oval, round and oblong shapes. Twelve different specialty metal-end tops are pictured, as well as illustrations of seven kinds of moisture- and grease-resistant wraps and liners. Circle No. **133.**

Nonreturnable Bulk Liquid Package

Hedwin Corp. offers a 4-page brochure on its "Cubitainer" package. A nonreturnable package designed to handle bulk liquids, it is composed of two parts: A semirigid molded plastic liner that is inserted into a cube-shaped corrugated container. Its advantages are listed and illustrated, and a list of products being packaged in "Cubitainer" is included. Circle No. **134.**

Flame-Proof Barrier Material

American Sisalkraft Corp. has a brochure describing "Pyro-Kure," a barrier material with flame extinguishing properties. Nontoxic and noncorrosive to metals, this material releases a gas that tends to smother flames when surrounding temperature reaches combustion stage. Circle No. **135.**

Automatic Packaging Machinery

Wright Machinery Co. offers a 34-page brochure on its bagging and weighing systems, Junior Weigher, candy cleaner, electronic weigher, and other machinery. The purpose, products it handles, how it functions, standard specifications and illustrations for each are included. Circle No. **136.**

Counting And Imprinting Machine

Pitney-Bowes, Inc. offers two pieces of literature describing the "Tickometer," a counting and imprinting machine for automatically counting, dating, coding, and imprinting labels, tags, cartons, and so on, at speeds from 500 to 1,000 pieces/min. A 10-page brochure, "Your employees' time is too valuable to waste," gives specifications and operating features of this machine. A separate bulletin of 12 case studies of savings attributed to the use of this unit is also included. Circle No. **137.**

Rotary Piston Fillers

The Pfaudler Co. offers bulletin No. 911 which describes its line of rotary piston fillers available in four models. Designed for packaging viscous or semisolid products within speed range of 60 to 600/min., machines handle tin, glass, and composition containers of most shapes, provided they have open mouth of 1½-in. diameter or larger to permit rapid filling. Specifications and dimensions for each model are included. Circle No. **138.**

Dry Product Weighers And Fillers

Weigh Right Automatic Scale Co. has a 12-page illustrated catalog which describes 27 models of its packaging machines. Equipment includes gross weighers, net weighers, volumetric and auger packers, coupon inserters, conveyors, elevators. They fill from milligrams to 25 lb. of dry materials in many types of containers, up to 150/min. Circle No. **139.**

Heat Seal Wrappers

Scandia Manufacturing Co. offers a data sheet on its model SUS wrapping machines. Using roll-fed cellophane, waxed paper, and so on, this equipment is available in two sizes that handle packages ¾ to 3¾ in. high, 2 to 14 in. wide, and 2 to 10 in. long. Speeds range up to 60 packages/min. Circle No. **140.**

Vibratory Equipment

Syntron Co. has a catalog, No. 5712, describing its line of vibratory bulk materials handling equipment. Included is information on vibrators, packers and jolters, hopper level switches, flow control valves, and so on. Catalog has 60 pages of illustrations, descriptions and specifications. Sales representatives are listed. Circle No. **141.**

Cushioned Shipping Bags

Jiffy Manufacturing Co. offers samples and descriptive material of its line of padded shipping bags. Bags available include a padded shipping bag made with mesh reinforced outer liner, heavy-duty shipping bag with outer liner of slick 90-lb. Beaming kraft, and utility shipping bag, unpadded, constructed of 100-lb. stock. Circle No. **142.**

Acetate Fibre Tapes

Minnesota Mining and Manufacturing Co. has published a 6-page illustrated bulletin describing its "Scotch" brand acetate fibre tapes. These are tapes with a cellulose acetate film backing which is reinforced with rope paper tissue. They are resistant to moisture, have high adhesion, are long-aging, and are available in twelve colors or transparent. A table is included which lists the thickness, tensile strength, stretch, and adhesion ratings for 8 different types of this pressure-sensitive tape. Circle No. **143.**

Packaging Films

Celanese Corp. of America has a folder containing information on its types of plastic films. Included are discussions of "Fortiflex," a linear polyethylene available in bottles and jars, as well as in sheeting for formed packages of all types, including food containers; acetate film for window boxes, bags, wraps, tapes, and laminations; "Fortiflex-A," a polyolefin plastic used in injection molded or blown bottles; emulsions for container coatings; and containers; polyvinyl acetate and other materials. Circle No. **144.**

Seamless, Unbreakable Cans

George D. Ellis & Sons, Inc. has a product memo, No. 111, in which its light, unbreakable metal cans of seamless, one-piece construction are illustrated and described. Included

are descriptions of "LabelStik" styles No. 10 and 20, and plain styles No. 12 and 22. "LabelStik" cans feature crimped-in, white labels for permanent identification of contents. Charts showing capacities, dimensions, packing per carton, and shipping weight are included. Circle No. **145.**

Release Coating

Dow Corning Corp. has a 4-page bulletin on its "Syl-Off" silicone anti-adhesive. "Syl-Off" paper coatings impart release characteristics and water repellancy to kraft, glassine, parchment, multiwall bag liners, boxboard, plastic film, and other packaging materials. It is said to be permanent, noncontaminating, and nonmigrating. Circle No. **146.**

Multiple Packeting Liquids/Powders

Brown Filling Machine Co. has an 8-page brochure describing its multiple Packeter. Speeds of 25 to 50 cycles/min. and up to 8 packets/min. are possible for liquids, powders, or combination of both. Circle No. **147.**

Carton Setup-Closing Equipment

Bivans Corp. has an illustrated brochure describing its line of carton setup and closing equipment, as well as accessory equipment for coding, gluing and handling various styles of cartons. Will handle cartons ranging from ⅞x⅝x1¼ in. to 5x3½x12 in. Circle No. **148.**

Bundle Wrapping

Battle Creek Packaging Machines Co. has published a folder on its model 48 bundling machine. This machine overwraps articles in groups of 6 to 24, at speeds up to 60 bundles/min. It can accommodate grouped packages from a maximum 12x7½x4½ in. to 6¼x2x2 in. using kraft, book, sulphite, or other papers requiring glue, as well as heat sealing films. Circle No. **149.**

Pressure-Sensitive Tape

Behr-Manning Co. has an illustrated folder describing some typical uses of 22 of its pressure-sensitive tapes. Circle No. **150.**

Package Sterilization

Wilmot Castle Co. is offering a 12-page brochure outlining its complete program on package sterilization. Types covered are steam, dry heat, and gas sterilization by inerted ethylene oxide. In addition to discussing how they research a product and package, engineer procedures and direct installations, they also list a number of products normally requiring sterilization and the method generally recommended. Circle No. **151.**

Automatic Wrapping Machine

Schooler Manufacturing Co. has a 4-page brochure on its "Wrapmaster" wrapping machine. It wraps using cellophane, waxed paper, or foil with seal made on longitudinal edge giving unbroken panel visibility on all four sides. Machine is adjustable from 12x7½x2½ in. to 2½x2x1½ in. Circle No. **152.**

Weighing And Filling Machine

The Trescott Co., Inc. has a bulletin on its "Trescomatic" machine, which is adaptable for weighing and filling any dry, free, or semifree flowing material, including food, drug, chemical, and hardware products. Most types of containers may be used in weights from 8 oz. to 25 lb. Weights and products can be changed rapidly. The bulletin is illustrated and contains specifications. Circle No. **153.**

Semiautomatic Cartoning

F. B. Redington Co. offers a folder on its "Automax," a single-operator cycle cartoner that feeds, expands, and places cartons in conveyor pockets. When the operator places tubes, bottles, or other solids or semisolid articles in the three-place loading trough, and slides it forward to insert the product, the "Automax" closes the package by tucking in the end-flaps and discharges it to conveyor on packing table. Finished packages can be produced at speeds up to 45 to 50/min. Circle No. **154.**

Wrapper For Odd Shapes

Crompton & Knowles has published an 8-page bulletin that describes four models of its wrappers. They wrap round, disc-shaped, oblong, oval, square, or irregularly-shaped products, either hard or soft. These units handle cellophane, glassine, plastic films, and paper. Speeds range up to 140/min. Circle No. **155.**

Counter/Batcher For Small Parts

Post Electronics offers a bulletin on its high-speed automatic counter-batcher model FCB-1. Adaptable to small parts, tablets, hardware, and so on, this portable machine counts up to 5,000 parts/sec. Circle No. **156.**

(Turn page)

FIBROUS SILICONE RUBBER

- *High permeability*
- *Excellent compression — deflection*
- *Outstanding compression set*
- *Good tensile and tear strength*
- *−65°F to 500°F temperature range*

COHRlastic FSR is a new and unique silicone rubber product. The unusual and random orientation of silicone fibers provides many useful properties superior to silicone sponge and foam. It should be extremely suitable for many applications including shock and vibration isolators, cushions, thermal insulators, high temperature press pads, pressure moldings, etc. COHRlastic FSR is being introduced in sheets 1/4" thick, 9" wide, 6' long, and in a density of 20 lbs./cu. ft. As applications develop, COHRlastic FSR will be made in continuous lengths, larger widths, different thicknesses and various densities in the range of 15-25 lbs./cu. ft.

FREE SAMPLE and data — Write, phone, or use inquiry service

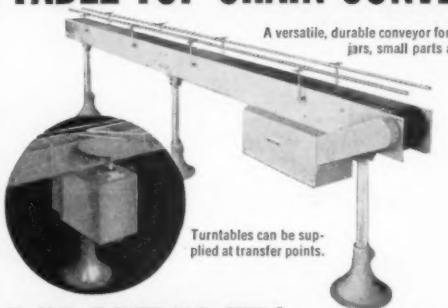
Leader in fabrication of silicone rubber products.

CHR CONNECTICUT HARD RUBBER

Main Office: New Haven 9, Connecticut

TABLE TOP CHAIN CONVEYOR

A versatile, durable conveyor for bottles, cans, jars, small parts and packages.



Turntables can be supplied at transfer points.

UNIBILT® *Conveyors and Engineered Systems*

Send for new UNIBILT® Bulletin

Illustrates and describes complete line of conveyors and systems and contains helpful application data.

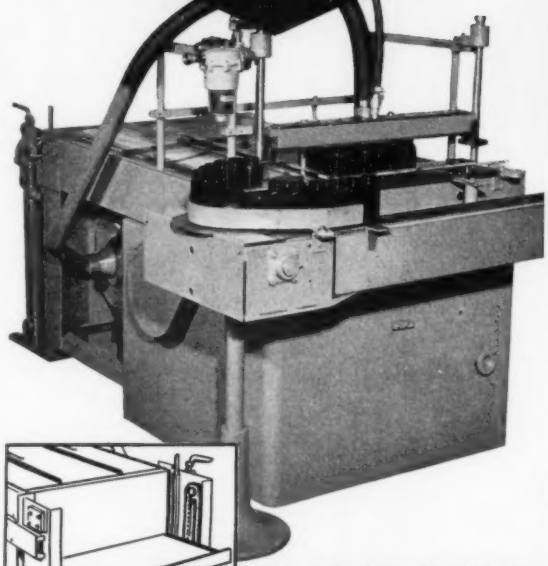
CONVEYOR SPECIALTY COMPANY, INC.

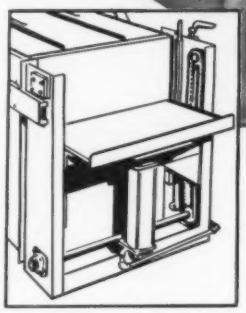
35 years' Experience Means Dependable Quality and Engineering

42 Newport Avenue, North Quincy 71, Massachusetts

MANIFOLD HEAD

air-cleans wide mouth containers





Air-operated platform with adjustable stops, for elevating multiple-tier cases.

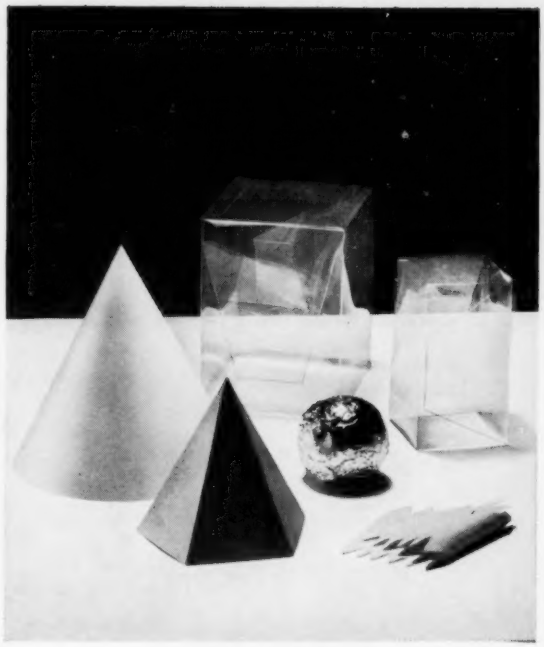
M-S FEEDER-CLEANER..

increases cleaning efficiency with heads specially designed for bottle size — gives quick changeover, accurate synchronization. Only one operator is necessary on this low-cost M-S machine which performs smoothly because it has fewer moving parts, fewer operations to air-clean bottles. Custom made to your requirements.

write or wire for full information

MACHINERY SERVICE COMPANY
214 Eiler Avenue, Louisville 14, Kentucky

OFFICES IN PRINCIPAL CITIES



If you package with papers, foils, films—even fabrics—

tissue may do the job for less!

Crystal makes tissues that can be handled, printed, sealed—do most anything costlier papers, foils, films or fabrics can do. Think about your current packaging problem. Remember that Crystal tissues are now used across industry because they can be stitched, or twisted or laminated or impregnated or what have you. Now—send the coupon for technical information or write if you have a special question.

Crystal®

First name in tissues for over 60 years

The Crystal Tissue Company, Middletown, Ohio

I want samples and more information on Crystal Tissues for special applications. PE-1159

*Name*_____

*Title*_____

*Firm Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

New types of Patapar® give you a REAL BARRIER against penetration of GREASE, FATS, OILS

As an inner protective barrier for multiwall bags . . . or wherever a grease-proof material is required, new types of Patapar Vegetable Parchment meet the most exacting requirements. These special grease-proof Patapars stop penetration. Oil will not spread on Patapar's surface. There is no grease "crawl".

Wet-strength, too

Permanent high wet-strength is another quality of the many different types of Patapar. And, made from pure cellulose, Patapar is odorless, non-toxic. It is furnished plain or colorfully printed.

If you would like to test Patapar for your product, write us telling your requirements. We'll send information and samples of the type we recommend for your purpose.

Patapar®
VEGETABLE PARCHMENT
HI-WET-STRENGTH · GREASE-RESISTING

OTHER PATERSON PRODUCTS
*PARCHKIN art parchment
*DURAPAR parchmentized cellulose
*PATAX waxed paper
*PATERSON custom made papers

PATERSON PARCHMENT PAPER COMPANY
Bristol, Pennsylvania
Sales Offices: New York, Chicago
West Coast Plant: Sunnyvale, California

HEADQUARTERS FOR VEGETABLE PARCHMENT SINCE 1885

Automatic Cartoners

R. A. Jones & Co., Inc. offers an 8-page brochure on two models of its "CMV" automatic cartoning machine. These units take a flat carton from a magazine, open it, tuck bottom flaps, convey open carton past manual loading stations, tuck top flaps, and deliver the loaded carton. Cartons handled range from ½x¾x 2½ in. up to 4¼x4¼x9 in. Circle No. **157.**

How To Use Foil

Anaconda Aluminum Co. is offering a 9-page booklet discussing the laminating, coating and printing of foil. Various types of printing, inks, adhesives and coatings are discussed as to where they should be used, shortcomings, and so on. Circle No. **158.**

Plastic Containers

Celluplastic Corp. has a brochure illustrating its range of stock plastic vials and jars. The line includes rigid polystyrene vials from ¾ to 2 in. in diameter, with lengths up to 6 in. Extruded flexible acetate and butyrate vials are available in diameters from ½ to 1¾ in., in almost any desired length. Also described is a line of squat jars in sizes up to 16 oz. The vials come in crystal-clear plastic, as well as a variety of colors. Multicolor printing of label or trademark is available. Circle No. **159.**

Vibratory Feeders

Eriez Manufacturing Co. has product literature on its vibratory feeder available in five different models. Featuring an electro-permanent magnetic drive, these feeders offer full feed or dribble feed up to (±) 2 per cent control on most materials. Units will handle dry materials ranging in density from 40 to 150 lb./cu. ft., for many feeding operations including spreading, separating, and proportioning prior to filling. Circle No. **160.**

Heat-Sealing Crimpers

Wrap-Ade Machine Co., Inc. has a 4-page brochure on three models of heat-sealing crimpers. Automatic or semiautomatic, they crimp and seal envelopes or bags of heat-sealable foil, cellophane, and similar materials. They offer a choice of six sealing patterns, and additional attachments are available for hole punching, notching and coding. Circle No. **161.**

Rubberized Hair Cushioning

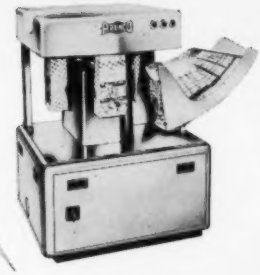
Blocksom and Co. has a brochure describing standards by which to choose proper pack to safeguard delicate equipment in shipping. Formula is given to calculate the required amount of cushioning under given conditions. Present uses of Blocksom packing are described. Circle No. **162.**

Cellophane Bundling

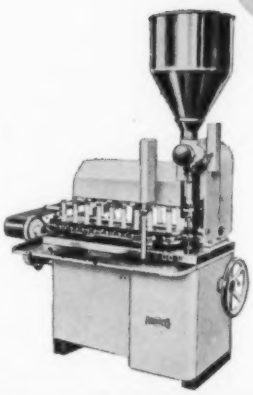
American Viscose Corp.'s Film Div. offers a 12-page booklet, "Cellophane bundling," describing the advantages of cellophane over opaque wrapping materials in bundling operations. Circle No. **163.**

Latex For Paper Coatings

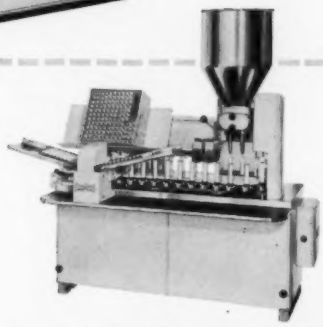
Koppers Co., Inc., plastics division, offers technical bulletin C-9-283 on its "Dylex" latex KCD-154, a latex for pigmented paper coatings. Koppers says it has as much as 50 per



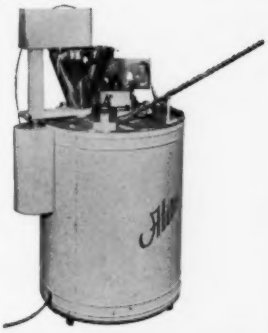
Arenco VUF bag feeding and opening machine feeds and opens up to 2000 bags per hour . . . for use in combination weighers or portioning machines and a bag sealing machine



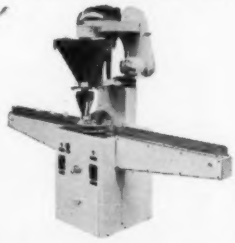
Arenco GAB tube filling machine for semi-fluid materials ranging up to stiff pastes fills up to 3500 tubes per hour



Arenco GAN high-speed tube filling machine, is similar to GAB but with special feed and dual filling nozzles. Fills up to 7000 tubes per hour.



Alite fully automatic powder compressing machine fills up to 1200 units per hour



Alite loose filling machine puts 16, 32 or 48 fills per minute into rigid containers of ¼-oz. to 3-lb capacity

Whatever your container... There's an Arenco machine to fill it for you

Whether it's a jar . . . a tube . . . a lady's compact . . . a bag . . . a sterile vial . . . a tin . . . or a carton, there is an Arenco machine especially designed to fill it, rapidly and efficiently. A sampling of the Arenco line is shown in the cut above, including the famous Alite line of powder filling machines. Speed, cleanliness, rugged construction and ease of maintenance are all integral design features of this famous series of filling machines. Parts and service for any machine is as near as your telephone; Arenco maintains an expertly staffed, fully equipped plant right here in the U.S. For prices and complete specifications of any of these units, write us today.

MANUFACTURERS OF FILLING, CAPPING, SEALING AND PACKING MACHINES

ARENCO

ARENCO MACHINE COMPANY, INC.

25 West 43rd Street
New York 36, N.Y.

cent increased film strength, which results in better pigment binding and increased pick resistance of coated sheet, and that foaming tendencies are considerably decreased. Circle No. **164.**

Single- Or Multiple-Item Packaging

Sundstrand American Broach Div. has a 6-page folder that illustrates and describes its model 50 automatic packaging machine. It forms package from rolls of heat-sealing paper or film, prints, fills package with single or multiple items, seals and counts. A cost study on manual versus machine packaging of aircraft parts is included in the folder. Circle No. **165.**

Corrugated Box Sealing

J. L. Ferguson Co. offers brochure 10037 which discusses its model D automatic case sealer which handles all types of corrugated boxes in a variety of sizes at speeds up to 3,000/hr. Circle No. **166.**

Technical Data On Polyethylene

Phillips Chemical Co. has a catalog on its "Marlex" polyethylene illustrating many of its uses. In a separate 18-page booklet, technical information on physical and chemical properties, pigmentation and applications are given. Circle No. **167.**

Polystyrene Sheet And Film

Plax Corp. offers a portfolio with descriptive literature, samples and price lists on its line of "Polyflex" polystyrene sheet and film. This nontoxic, odorless, tasteless, waterproof, and greaseproof material is suitable for overwraps, bags, pouches, formed containers, and envelope and carton windows. Circle No. **168.**

Polyethylene Film

Visking Co., division of Union Carbide Corp. offers an 18-page booklet of technical information on "Visqueen" film and the polyethylene resin from which it is extruded. The booklet discusses the effects of chemicals on the film's physical properties, its transmission of oils, vapors and light, directional properties; and includes a section on the structure and properties of polyethylene. Circle No. **169.**

Paperboard Samples

Marathon, division of American Can Co., has available details and samples of its "HiFi" paperboard with a "Glamakote" finish. This type of board is suitable for ice cream, frozen food, baked goods, meat, and so on. Circle No. **170.**

Saran Wrap

The Dow Chemical Co. has a 14-page booklet of technical data on saran wrap. Listed are the gas impedance, bursting strength, moisture permeability, chemical resistance, tear strength and other characteristics of 39 types of saran wrap. Circle No. **171.**

Automatic Vial Fillers

Baltimore Biological Laboratory, Inc. offers an 8-page catalog listing specifications and prices for five basic models of automatic pipetting machines. These units dispense accurately measured volumes of fluids and are especially suitable where aseptic handling is required. Aqueous as well as highly viscous solutions and suspensions can be processed. Machines are designed to fill ampules, vials small-necked-bottles, with medicinals, chemicals, oils, lacquers, and so on. Circle No. **172.**

Paper, Film, Foil Bags

Kennedy Car Liner Co. offers a brochure called "This is Kennedy," which comes sealed in a "zip-lip" polyethylene bag which may be resealed and reopened repeatedly. The 16-page brochure describes and pictures a variety of bags, packages and other products made by the company from paper, film and foil. Circle No. **173.**

Liquid Packaging

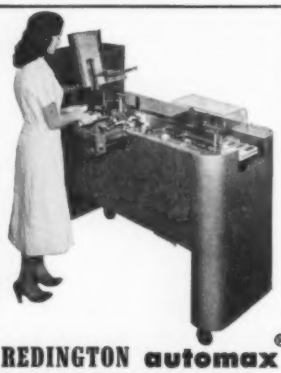
Leedpak, Inc. has a brochure describing its "All-Pac" liquid packaging system which forms (on the production line) plastic bottles up to 1 qt. from flat sheets in gauges up to 0.040 in., tests them for leakers (which are automatically rejected), fills, seals and discharges them at rate up to 6,000 finished containers/hr. Circle No. **174.**

Tray Elevator

Lynch Corp. offers an illustrated booklet, "Lynch Robo-Lift tray elevator." A case history, the booklet tells and shows how a macaroni manufacturer used the "Robo-Lift" to move cartons vertically. Circle No. **175.**

Cushion Padding

Wood Conversion Co. offers Form 657 which contains samples and



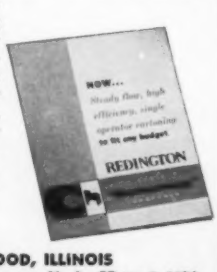
Carton 40-60 Units Per Minute—with just one operator—at LOW MACHINE COST

Just one compact, efficient machine—with just one operator—will handle almost any product you package in reverse tuck folding cartons, at the rate of 10,000, 15,000, 18,000 packages per day. Yet, installed and turning out steady production, costs less than $5000!

REDINGTON automax® CYCLE CARTONER

feeds and forms cartons, places them in conveyor pockets. One operator places the item to be cartoned in each of the three loading troughs, then pushes slide forward and back. AUTOMAX tucks in end flaps, discharges finished packages, restarts the cycle—*all automatically!*

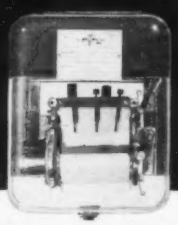
Solidly built for long, trouble-free service, AUTOMAX is just 70" long, 30" wide, weighs only 750 lbs. It's caster-mounted—move it anywhere in the plant you need it, even where floor space is limited. Perfect for tubes, bottles, toys, parts, hardware—whatever you carton. *Adjustable.*



★ *Write for illustrated folder giving full details about AUTOMAX—priced to fit your budget.*

F. B. REDINGTON CO.
3022 ST. CHARLES ROAD, BELLWOOD, ILLINOIS
Chicago Phone: AUstin 7-4200 • Verona, N. J., CEnter 9-4608

IMPACT-O-GRAPH solves appliance damage mystery!



How did it happen? Where did it happen? Who is to blame? Those are the questions a leading refrigerator manufacturer asked when the porcelain enamel arrived in damaged condition.

This mystery was quickly solved by IMPACT-O-GRAPH. Rather than guess at the cause of damage, this manufacturer placed an IMPACT-O-GRAPH in a refrigerator as it left the assembly line. IMPACT-O-GRAPH proved that the damage was caused on the shipping dock — when the crate was tipped on its side for address labeling.

Result? The stenciling method was changed and damage substantially reduced.

For measuring acceleration, deceleration, or shock, IMPACT-O-GRAPH eliminates guess-work, gives the correct answers quickly.

A choice of models for different requirements in many "G" intensities. Write for a brochure telling the whole story. Leasing arrangements available. IMPACT-O-GRAPH is National Safe Transit approved.

The IMPACT-O-GRAPH Corp.
1900 EUCLID AVE. CLEVELAND 15, OHIO

Circle No. 283 on Card, Page 107

Circle No. 284 on Card, Page 107

Protective packages for aircraft and missile instruments, computers, chemical glassware, and various guidance missile devices, are among custom-molded urethane foam containers developed by Standard Plastics, Inc., for new needs of industry.

. . . says C. D. Snelling, president, Standard Plastics, Inc.

"Our custom-molded urethane foam packaging saves our clients as much as 30% in costs, reduces bulk by one-third and weight by 75%," states Mr. Snelling.

"We proved to our customers that urethane foam has a definite place in the packaging field," he adds, "and 1959 is proving to be the big year in this developing industry.

"The excellent energy absorption of urethane foam at low density and low compression set is supplemented by the economy of this material in terms of cost, space and weight savings. For example, our foam package for magnetron tubes replaced a wooden packing case with rubberized hair at a cost saving of 30%, a cube space reduction of 85% and a weight saving of 65%. This means a reduction of 55 cubic feet per tube package and 157 pounds per unit—pretty important figures to a shipper!

"The no-dust feature of urethane foam is also very important in packaging sensitive instruments and components," says Mr. Snelling. "And the low moisture content (.3%) makes urethane foam virtually chemically inert as well as affording corrosion resistance to silvered surfaces and the like."

Standard Plastics, Inc., was formed in 1954 to mold urethane foam products exclusively. Recently a new 16,000 square foot plant was opened in Fogelsville, Pa., which, incidentally, has urethane foam-lined office interiors for temperature and sound insulation.

Write Mobay for other examples of how urethane foam specialists are working with industry to improve the profits and potential of new products.

MOBAY
CHEMICAL COMPANY
Dept. PE-9 • Pittsburgh 34, Pa.

Mobay is the leading supplier of quality chemicals for the manufacture of both polyether and polyester urethane foams.

MOBAY
First in Urethane Chemistry

A CHAMPION WORKHORSE

TO REMOVE WAX-GREASE

★ HANDY CONTAINERS

Order **WAXCLEEN** in 1 gal. tins, cartons of 6-1 gal. tins, 5 gal. tins and the economical 55 gal. drums

WAXCLEEN quickly removes wax and grease from sealing plates, feed rollers and belts of wrapping machines. WAXCLEEN prevents incomplete and distorted sealing, torn paper and bunched wraps. It does away with costly rewrapping delay, and loss of stock. WAXCLEEN does not contain toxic carbon tetrachloride. It dries rapidly and leaves no odor.

ORDER A SUPPLY FROM WAXCLEEN COMPANY Div. of

GMC GENERAL MACHINERY CORPORATION
SHEBOYGAN, WISCONSIN

Circle No. 286 on Card, Page 107

specifications on its "Cargo Pak" cushion padding for protective packaging. Product offers flotation, pressure point padding, surface protection, absorbent packing, moisture resistant, and thermo packing. It is furnished in roll form or cut to size. Circle No. **176.**

Reinforced Protective Papers

Thilmany Pulp & Paper Co. has a sample kit, P558, containing samples of non-staining "Thilco Tuf" reinforced protective papers. It is puncture resistant, oil resistant, available in widths up to 120 in., and is used for wrapping a variety of products such as furniture, textiles, finished wood products, and so on. Circle No. **177.**

Textile And Paper Bag Closing

Dave Fischbein Co. has a catalog file picturing and giving information about its line of closing equipment for textile or paper bags. Included are the portable bag closer, tape binding attachment, suspension units, and table model. Circle No. **178.**

Bag Feeder, Opener And Weigher

B. F. Gump Co. has a series of letters from users, describing the advantages of its "Bar-Nun" net weighter and "Bar-Nun" bag feeder, opener and weigher. This 4-page brochure illustrates the range of models, with weighing capacity from ¼-oz. to 5-lb./discharge. Circle No. **179.**

Semiautomatic Liquid Filler

U. S. Bottlers Machinery Co. offers booklet 031556 describing its semiautomatic straight-line vacuum filler which handles round, rectangular or oval containers and is adjustable to containers ranging from 3/4- to 6-9/16-in. diameter. Also filler is available in plastic construction for handling corrosive liquids. Circle No. **180.**

Dictionary Of Paper Terms

Mosinee Paper Mills Co. has a 20-page dictionary of paper terms which lists over 150 definitions of somewhat technical terms used in connection with Mosinee moisture- and flame-resistant papers, reinforced papers, neutral papers, and so on. Also illustrated and described are eight instruments used in testing paper. Circle No. **181.**

Aluminum Foil Packaging

Reynolds Metals Co. offers a folder compiling a series of 21 laboratory reports describing the characteristics and uses of aluminum foil as a packaging material. Some of the subjects covered are: aluminum foil as a gas barrier, insulator, light barrier; vitamin retention, cook-in packages, developments in overwraps. Circle No. **182.**

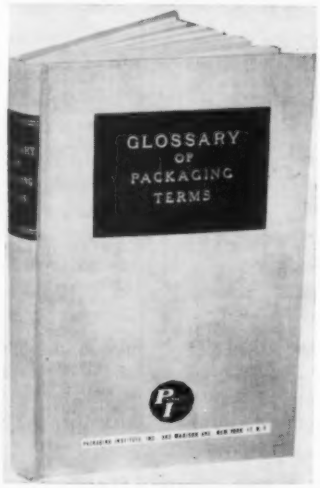
Bread Wrapping

Waxed Paper Merchandising Council, Inc. offers an illustrated 20-page manual, "How to solve your bread wrapping problem." Taking the three primary factors in any wrapping operation, the manual discusses the proper condition of the product, correct methods for handling and storing waxed paper, installation, operation and maintenance of wrapping machine and others. Circle No. **183.** (End)

PACKAGING INSTITUTE'S GLOSSARY OF PACKAGING TERMS

SPECIAL INVENTORY OFFER—now $3.00 per copy—originally $6.75

The ONLY Complete
Definition of
the Language
of Packaging
A Valuable Working
Aid If You Are In . .
Distribution
Engineering
Management
Material Handling
Production
Purchasing
Research & Development
And Many
Other Fields



Authoritative . . . .
The Result of
Industry-Wide
Cooperation

323 pages
of definitions

Durably Bound
in Hard Cloth Cover

6 x 9 inches

Included in U. S.
Government Interim
Standard 0075 B. D. S. A,
Department of Commerce

Please enter my order for P.I.'s *Glossary of Packaging Terms*, 2nd Edition, as follows: _____ copies at $3.00 ea. Total $_____

☐ Payment enclosed $_____ ☐ Bill me ☐ Bill my company

Name and company _____

Street _____ City _____ Zone _____ State _____

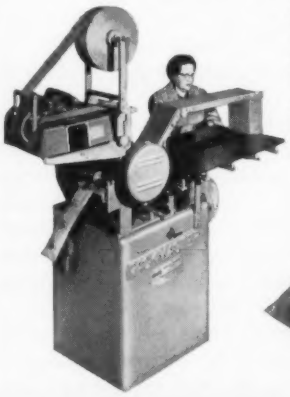
Mail today to: Packaging Institute, Inc., 342 Madison Avenue, New York 17, New York

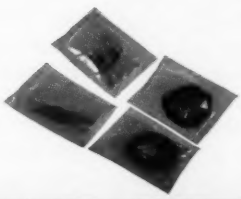
Lower Unit Costs on a Broad Range of Packaging Jobs

Quality packages at a minimum unit cost are assured on any of the three types of Sundstrand-Packmaster machines shown. Experienced packaging engineers are available to assist in developing the most efficient machine combination for your job.
Sundstrand-Packmaster machines are designed with interchangeable components that speed change-overs by eliminating complicated adjustments and the need for specially skilled help. Optional features like counters, printers, etc. are available either with the original purchase or for addition at a later date.

PACKMASTER MODEL 50

Machines are available with a pusher feeder or dial feed and can produce as many as 80 square or rectangular packages per minute. Package sizes range from 2 x 3 inches to 6 x 6 inches using various combinations of transparent and opaque heat-sealed feeders. Printers, counters, and hopper feeds for automatic operation are available.



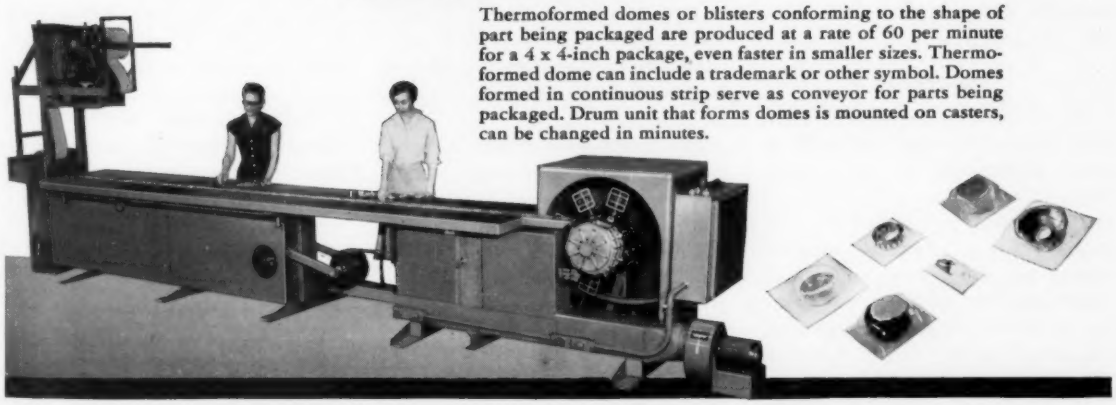


PACKMASTER MODEL 56

Long workpieces, including those with irregular shapes, from ¼ to 2 inches thick can be handled on the Model 56 in widths up to 24 inches. Machine has automatic package cut-off adjustment feature that enables several lengths and shapes of parts to be handled in a single run. Among parts packaged successfully to date are automotive trim including grilles, extrusions, telephone bases, etc.

PACKMASTER MODEL 58

Thermoformed domes or blisters conforming to the shape of part being packaged are produced at a rate of 60 per minute for a 4 x 4-inch package, even faster in smaller sizes. Thermoformed dome can include a trademark or other symbol. Domes formed in continuous strip serve as conveyor for parts being packaged. Drum unit that forms domes is mounted on casters, can be changed in minutes.



See Packmaster Machines in Action in Booth 720 at the Packaging Machinery Manufacturers Institute Show November 17-20.

SUNDSTRAND

SUNDSTRAND PACKAGING EQUIPMENT

SUNDSTRAND-AMERICAN BROACH

Division of SUNDSTRAND CORPORATION • Ann Arbor, Michigan

Manufacturers and distributors of Packmaster Machines

For more information circle No. 287 on Reader Service Card, Page 107

Structural design notes for corrugated containers

Note No. 10:

Buckling patterns of tubes

By K. Q. Kellicutt, *Engineer, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, Madison, Wisconsin*

Introduction. An intermediate step in research designed to relate the physical properties of paperboards and built-up corrugated fibreboards to those of shipping containers made from these boards involves tests of rectangular tubelike structures. The tube simulates the walls of a container and is without top and bottom, thus eliminating the variable of horizontal creased edges found in completed boxes. Although some of the tubes used in tests discussed in this note were made from paperboards that are not now used in the same weights and thicknesses, the results demonstrate the principles and relationships involved.

Tube Tests

The blanks from which each tube was made were cut with a sharp power saw to the proper size, with the corrugations either perpendicular or parallel to the tube's height. **Sawing assured square top and bottom edges and eliminated the crushing and tearing of liners and corrugations** that occurs along the edges when a shearing blade is used for cutting. Each blank was scored in a bar-type machine, care being taken to make all scores the same depth. The blank was bent 90° at each score, and a joint corresponding to a manufacturer's joint was made by overlapping one side panel over the edge of the side panel on the opposite end of the blank a distance the thickness of the fibreboard. Cloth-backed tape 3 in. wide was applied to both the inside and outside surfaces at the joint. The tape was trimmed square to the exact height of the tube with a razor blade or sharp knife.

Thirteen different square cross sections were used, ranging from 2 in. square up to 16 in., in increments of 2 in., from there in increments of 4 in. up to 32 in., with the thirteenth being 35 in. square. The height of the tubes varied from 2 in. up to 16 in., in increments of 2 in., and from there up to 48 in. in increments of 4 in.

Oblong cross sections used were either two or three times as long as they were wide and from 2 to 24 in. high.

The tubes were tested in compression in a universal testing machine after they had been conditioned in a standard atmosphere maintained at 75°F. and 50 per cent relative humidity. An autographic load-compression curve was obtained for each tube.

COMPRESSIVE STRENGTH OF TUBES

Several factors influence the load a tube can withstand in compression: Shape of the tube, weight of the liner board, direction of the flutes in relation to the direction of the crushing load, and the relative size of the flutes.

Effect Of Shape

In general, the maximum load that tubes of given cross section withstood decreased as height increased from 2 in. up to 12 or 16 in. For tubes higher than the 12 or 16 in., the loads remained fairly constant regardless of height. This may be explained by two facts. First, in short tubes, failure is due almost entirely to crushing and rolling along the edges. In tubes of greater height, failure is due to a combination of crushing and buckling. In tubes higher than 12 to 16 in., depending upon the material, failure is due predominantly to buckling which generally occurs at a lower load than a failure primarily of the crushing type.

The second fact was established by Carlson a number of years ago. He found that the lower limit of height—that is, 12, 14, or 16 in.—representing the buckling wave length into which any particular combination of corrugated material would shape itself under stress, and that the greater heights were merely multiples of this wave length *(1)*. To illustrate this fact, he showed by experiment that a tube made of a specific material, 12 in. square in cross section and 12 in. high, would resolve itself into one complete wave just before failure occurred. Tubes with the same cross section and made from the same material, but four times as high (48 in.) resolved into four complete waves before failing and attained the same maximum compressive load as the 12-in.-high tube. With tubes of other sizes and fibreboards, the length of the wave varies, depending in

TABLE I

Description Of Built-Up Double-Faced Corrugated Fibreboard For Tubes*

Board Code	Liners† Caliper (in.)	Corrugations‡ Flute	Corrugations‡ Caliper (in.)	Burst Strength Built-Up Board (lb./sq. in.)
II ..	0.016	A	0.009	260
MM ..	0.030	A	0.009	409
NN ..	0.009	A	0.009	181
OO ..	0.016	B	0.009	275
PP ..	0.009	B	0.009	193
RR ..	0.030	B	0.009	412

*Results of tests shown in Fig. 1.
†Liner material: Fourdrinier kraft, water finish one side.
‡Corrugating material: Kraft.

part upon the combination of paperboard components in the corrugated structure, with the liners exerting the greatest influence.

Liner Effect

Since the liners are the strongest paperboards in a corrugated board, they are considered to be the load-carrying members of the structural material. **The strength of the liner is closely related to the kind of fiber from which it is made and its weight and thickness.** Experiments have shown that, for any tube size, the tubes made from boards with the thicker, heavier liners are the most resistive to compressive stresses. This, of course, can be accounted for by the fact that the moment of inertia of the boards with thicker liners is greater and hence the structure is stiffer *(2)*.

In considering the strength of the liners and their influence on strength of the structure, the direction of the applied stress in relation to fibre orientation of the liner must be taken into account. In tubes with flutes running vertically in the side walls, the stresses are applied to the across-machine direction of the liners as well as that of the corrugating medium, just as in conventionally made regular-slotted boxes.

Direction Of Flutes

For the vertical direction, the flutes also provide stiffness. When the compressive load is applied at right angles to the flutes, however, they provide little resistance to the crushing force. Since, with loads so applied, the liners are being stressed in their strongest direction, the machine direction, they consequently provide essentially all of the resistance to compressive forces.

Relative Strength Of Flutes

Generally, tubes made of A-flute board are stronger than either C- or B-flute tubes made from similar paperboard components when the compressive force is applied parallel to the direction of the flute. The next strongest for these conditions is the tube with C-flutes. The primary reason is that the A-flute board is the thickest of the three and therefore has the greatest moment of inertia. When the force is applied in a direction perpendicular to the flutes, however, the order of strength is reversed, B-flute tubes being strongest.

As previously mentioned, for this direction the liners take the load and the corrugations provide little resistance. In this position the portion of the liners between the tips of adjacent flutes may be considered as independent elements resisting the crushing loads. Since the distance between flutes is less for B-flute than for C- or A-flute, this independent column is shorter and consequently will resist greater forces.

The relationships between A- and B-flute tubes, the influence of liner weight, and the relationship between dimensions and strength are shown in Fig. 1. The components for these tubes are given in Table I.

In comparing tubes of oblong section with square ones of the same height, no unqualified statement can be made. While the square sections are generally strongest, this is not always true. In one set of tests, for example, oblong tubes having a length twice the width attained consistently higher loads than square tubes for perimeters of 24 to 96. Oblong sections having a length three times their width attained loads generally appreciably lower than those for square sections. (*Turn page*)

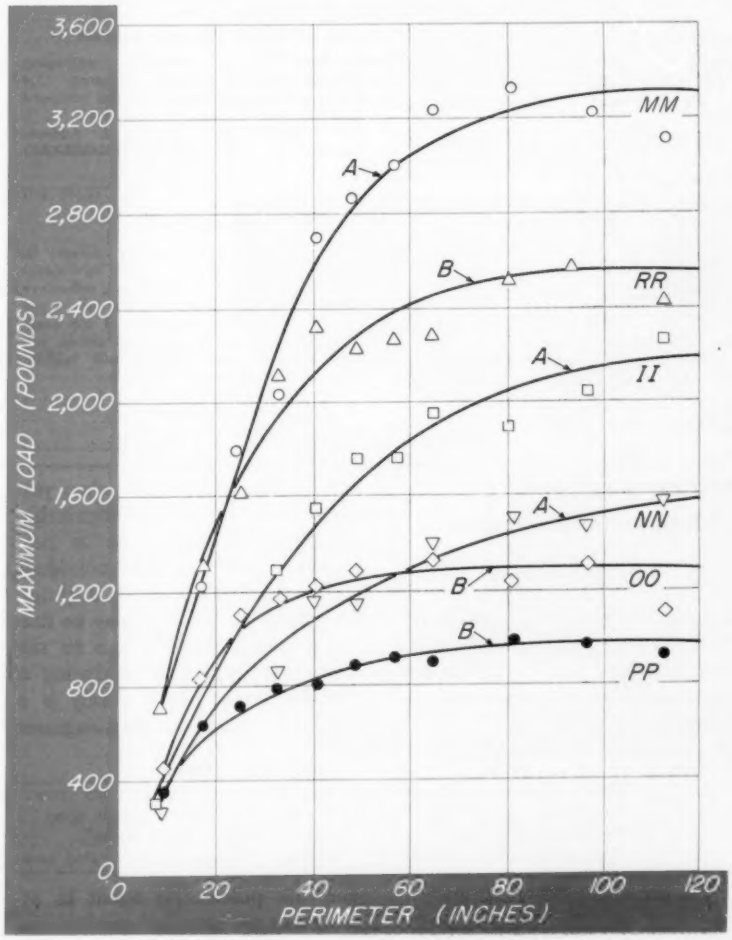


Fig. 1. Relation of tube perimeter to maximum load.

Practical Application Of Tubes

In addition to its use as an intermediate step in experimentally correlating the strength of material with that of the box, the tube has a practical application. Frequently it is placed inside a box to add rigidity where exceptional compressive loads are anticipated.

Literature Cited

(1) Carlson, T. A., "Corrugated board and its component parts as engineering materials," *American Management Association Proceedings*, (1941), Ser. 128: pp. 23-39.

(2) Kellicutt, K. Q., "Note No. 7: Relationship of moment of inertia to stiffness of corrugated board," PACKAGE ENGINEERING, 4 (1959), No. 8 (August), p. 84. (*End*)

Tomorrow's films challenge today's research

(*Continued from Page 68*)

ents 1,548,864 (August 11, 1925) and 1,601,289 (September 28, 1926).

(2) Charch, W. H. and Bateman, D. E., U. S. Patent 2,159,007 (May 23, 1939).

(3) Charch, W. H. and Prindle, K. E., U. S. Patent 1,737,187 (November 26, 1929).

(4) Conix, A., *Industrial Engineering Chemistry*, **51** (1959) p. 147.

(5) Cross, C. F., Beven, E. J., and Beadle, C., U. S. Patent 604,206 (May 17, 1898).

(6) Lasoski, S. W., Jr. and Cobbs, W. H., Jr., *Journal of Polymer Science*, **36** (1959) p. 21.

(7) Stearn, C. H., U. S. Patents 622,087 (March 28, 1899), 716,778 (December 23, 1902), and 725,016 (April 7, 1903); British Patent 2,529 (1902). (*End*)

Making your own folding carton samples

(*Continued from Page 74*)

20-point white patent-coated news. The following may be slightly exaggerated, but see if you do not see a similarity to your actual experience.

Supplier	Style	Board
1.	"Super flip-flop supermatic"	20-point special "Scrumptious" news
2.	"Instaneous set-up carton"	20-point "Superbrite" patent news
3.	"Automatic telescope"	20-point "High White Super"
4.	"Packing foreman's friend"	20-point "Glamourwhite" coated news

The list could go on as long as the list of your suppliers. As listed above, the only recognizable similarity is the caliper. Yet when you get samples the only recognizable difference in appearance or performance will be the individual carton supplier's method of gluing or cutting the flaps. It may be fine for a mill manager's ego to say his is the only mill producing a specific board, but it surely is a burden on the packaging engineer and the purchasing agent in attempting to compare quality and price. (*End*)

CLASSIFIED ADVERTISING

Rates: $30.00 per column inch or fraction thereof. If boxed, add $30.00.

Copy: Figure 40 characters per line, 9 lines per inch. Include reply address.

Terms: Cash with order.

POSITIONS AVAILABLE

Assistant Product Development Engineer

Leading company in packaging field has excellent job opportunity for engineer. Responsibilities include all phases of package design and development of new application for corrugated board. Degree in engineering and a minimum of one year experience in engineering practice required. Position gives opportunity to apply engineering principles to creative aspects of packaging and to work with customers to develop and adapt ideas. Starting salary $5,700 to $7,200 plus liberal fringe benefits including tuition aid. Reply to Box 1101 c/o **PACKAGE ENGINEERING,** with confidential resume.

Packaging Laboratory Assistant

Assistant Designer corrugated packaging. Creative flare. Experience preferred. Outstanding Packaging Lab. Top rated company. Excellent opportunity for right man. N. Y. State. Replies held confidential. Address: President, Box 1102, **PACKAGE ENGINEERING.**

Adhesives Chemist

. . . to develop new types of cements for industry. Must be familiar with formulation of rubber, resinous and polymeric adhesives, including latex, solvent and hot-melt types. New, well-equipped laboratory of old established company offers excellent facilities, suburban location and contact with talented associates. Write giving details to:

F. E. Wilson
Benjamin Foster Company
Ambler, Pennsylvania

Packaging Machinery Specialist

Large multi-plant packaging company seeking Development Engineer to work with folding carton sales representatives in setting up packaging lines and facilities. Must have technical knowledge of packaging machinery, be able to make schematic layouts and presentations to customers. Openings in Los Angeles and Seattle areas. Reply to Box 1103, **PACKAGE ENGINEERING.**

Engineer-Editor

Mechanical or industrial engineering background with experience in packaging. Writing ability helpful. Age to 30 years. Interesting future with our own rapidly growing company. Send education and experience resume, in confidence, to R. B. Holmgren, Editor, **PACKAGE ENGINEERING.**

Chief Machine Designer

Exceptional opportunity for experienced packaging equipment engineer in Chicago area. Supervision of design personnel, automatic machines and food industries desirable to head this permanent position. Replies confidential to Box 1104, **PACKAGE ENGINEERING.**

Machinery Engineer

Avisun Corporation, a joint affiliate of American Viscose Corporation and Sun Oil Company, needs an engineer with experience on automatic packaging machinery. Degree in mechanical engineering is preferred or equivalent experience (minimum of 5 years). Work location—Suburban Philadelphia (Marcus Hook). Considerable travel involved. Interested and qualified applicants are invited to submit a resume to:

Recruitment Manager
American Viscose Corporation
1617 Pennsylvania Blvd.
Philadelphia 3, Pa.

USED EQUIPMENT FOR SALE

For Sale Cheap. A-B-C Model L Automatic Top and Bottom Case Sealer. Machine never used. Reply to Box 1105, **PACKAGE ENGINEERING.**

BUSINESS OPPORTUNITIES

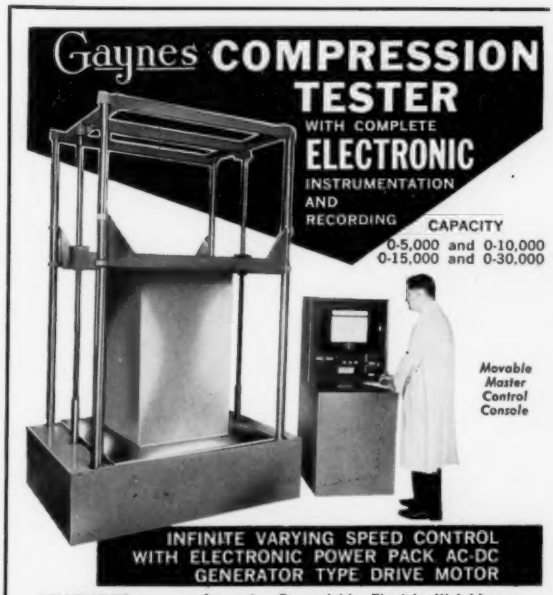
New Patents, Processes, Products Wanted

Well financed industrial firm will buy outright, or develop and market on royalty basis. We are particularly interested in patented ideas in the chemical or packaging fields. If the item is not patented, disclosure will be received only on a non-confidential basis. Your written reply will receive most careful consideration.

M. M. Fisher Associates, Dept. Q
79 West Monroe Street
Chicago 3, Illinois

Index of Advertisers

A-B-C Packaging Machine Corp. 88
ACF Industries, Inc., Avion Div. 80
Aluminum Company of America 7
American Sisalkraft Corp. 15
Arabol Mfg. Co. 34
Arenco Machine Co., Inc. 115
Bartelt Engineering Co. 24
Battle Creek Packaging Machines, Inc. 85
Bivans Corporation 96
Brown Company, Paper Div. 54
Clupak, Inc. 28
Colt Packaging Machinery Co. 91
Arthur Colton Company 33
Connecticut Hard Rubber Co. 112
Consolidated Packaging Machinery Corp. 95
Container Corporation of America 103
Container Equipment Corp. 19
Conveyor Specialty Co. 112
Crompton & Knowles Packaging Corp. 110, 111
Crossett Paper Mills 35
Crystal Tissue Company 113
Dobeckmun Co., Div. of Dow Chemical 17
Dow Chemical Company, The 20, 21, 101
du Pont de Nemours & Co. (Inc.), E. I. 32
Economic Machinery Co. 22, 23
Elgin Manufacturing Co. 55
Emhart Mfg. Co., Portland Div. 37
Exact Weight Scale Company 60
Ferguson Co., J. L. 87
Fischbein Co., Dave 89
FMC Packaging Machinery Div., Stokes & Smith Plant 79
Food Machinery & Chemical Corp.,
Canning Machinery Div. 58
Frazier & Son 100
Gaynes Engineering 123
General Machinery Corp. 118
General Corrugated Machinery Co., Inc. 66
Girdler Process Equipment Div., Chemetron Corp. 105
Goodyear Tire & Rubber Co., The 3
Gump Co., B. F. 98
Hinde & Dauch 38
Impact-O-Graph Corp. 116
Industrial Marking Equipment Co. 16
International Paper 25
R. A. Jones & Co. ..... back cover
Kartridg Pak Co. 81
Koppers Co., Inc., Plastics Div. 18
Labelette Company 80
Ludlow Papers, Inc. 13
Lynch Corporation 14
Machinery Service Co. 113
Markem Machine Co. 10
Marsh Stencil Machine Co. 98
Mid-States Steel & Wire Co. 102
Miller Hydro Co. ..... inside back cover
Minnesota Mining & Mfg. Co. 90, 109
Mobay Chemical Co. 117
Mojonnier Associates—See Kartridg Pak Co. 81
Monsanto Chemical Co., Plastics Div. 26
Morningstar-Paisley, Inc. 5
National Starch & Chemical Corp. 11
New Jersey Machine Corp. 27
Olin-Mathieson Chemical Corp., Packaging Div. 67
Package Machinery Co. 29
Packaging Corporation of America 36
Packaging Institute 118
Paterson Parchment Paper Co. 114
Pfaudler Permutit, Inc., The Pfaudler Div. 6
Phillips Chemical Co. 99
Pyroxylin Products, Inc. 86
R. C. Can Company 82
Redington Co., F. B. 116
Reynolds Ink, Inc. 94
Reynolds Metals Co.
Aluminum Foil Packaging 1
Plastics Div. 30, 31
Rhinelander Paper Co. 84
Riegel Paper Corp. 51
Rondo of America, Inc. 100
Scandia Packaging Machinery Co. ..... inside front cover
Schooler Mfg. Co. 92
Sundstrand American Broach Div.,
Sundstrand Corp. 119
Syntron Company 12
Thilmany Pulp & Paper Co. 69
Union Bag-Camp Paper Corp.,
Flexible Packaging Div. 104
Multiwall Div. 65
United Shoe Machinery Corp. 56, 57
U. S. Industrial Chemicals Co. 75
Waldorf Paper Products Co. 9
Weber Marking Systems 59
Wright Machinery Co. 93



FEATURES
- Accurate, Dependable Electric Weighing
- 4 Post construction for Maximum Rigidity and perfect Alignment
- Permanent Chart Records
- No mechanical linkage to Master Console
- Can be arranged for Tensile Testing
- No Springs
- No Balance Beams
- No Counterweights

For complete information call or write

Gaynes ENGINEERING COMPANY
1646 W. FULTON ST., CHICAGO 12, ILL., HA. 1-5257

What we think

Michigan State's packaging school needs support—now

Anyone who has ever taken a young engineer or technical school graduate into the packaging function of his company knows all too well how long it takes simply to get him to *think* about packaging. Many a manager and superintendent has asserted that the hardest part of the job is to *sell* packaging to that individual.

Lead time gained in not having to do this can be of incalculable value. To gain the advantage of this, the obvious solution is to hire graduates already oriented to the packaging field. Fortunately, there is a source of such people. But how many are available?

For a long time Michigan State University has been striving for industry support of its four-year program in packaging. At last the efforts of the school and of the indefatigable executive director of its Packaging Foundation, Henry G. (Harry) Walter, are beginning to pay off.

Now the money is starting to flow to MSU

Latest reports are that $75,000 in gifts and specific commitments are now in the till. There is every indication that another $75,000 is "almost" in the till. The whole thing has thus gone beyond the conversation stage and into the cash register.

"But why should we support the program?" various companies ask. Some object to giving money to state-supported education, saying that all they are doing is lightening the tax load for the taxpayers of Michigan who would be supporting the program anyway. Some say that the way to contribute to education is through scholarships, professorships and research studies, and they object to buying brick and mortar. Others say that you are all wet even to try teaching as specific a course as packaging, contending that the way to educate students is to take out the "hardware" courses and get down to basic sciences.

The question of lightening the taxpayer's burden is really not an issue. Any field or industry that wants a program so clearly geared to its needs is going to have to pay for it. And we now are finding companies willing to build buildings and put their money in brick and mortar, rather than in scholarships and professorial chairs.

Just how specific an education should be is one of the knottiest questions of all. We think the argument about packaging education being so much "hardware" is not pertinent because these students do get a good general college education. Requirements merely for entering the packaging program are unusually stiff. They include three terms of calculus.

Simply because the courses are sufficiently practical to qualify a student to perform certain packaging functions almost immediately upon joining his company does not mean the training is merely vocational. Far more important is the point of view the graduate brings to his job. These packaging majors are no ordinary college students. The most casual tour of the school of packaging and the briefest of conversation with the packaging students reveal an unusual esprit de corps and a sharp interest in packaging as a career.

Probably the hardest bit of soul-searching is that done by the corporate officers who concede that the program is doing a real job and accept the graduating product as being well qualified, but seriously doubt that their individual company will get enough of them to justify a substantial contribution. This is a problem; obviously the acknowledgement letter for a contribution received never can carry an I.O.U. for so many heads out of the graduating class.

You are investing in the future of your field

But the same question might be asked of other educational projects or civic ventures to which companies are currently contributing so liberally. We think that well-managed companies regard their contributions as investments. Those concerned with packaging will recognize that unless industry comes up with $2 million, there just isn't going to be a school of packaging. The packaging field as a whole may well ponder the *price* of the school as balanced against the *cost* of not having it. And now is the time to start paying it and thus investing in the future of packaging.

Bruce Hollingren

Editor

SEE the LATEST ADVANCE in AUTOMATIC PACKING!

PMMI SHOW · NEW YORK COLISEUM · NOV. 17-20

MILLER HYDRO

Air-Matic

CASE PACKER

GENTLY, AUTOMATICALLY, EFFICIENTLY PACKS

. . . Regardless of Size or Shape

THE PACKER THAT GENTLY BABIES YOUR PRODUCT

OVER 700 IN USE — PROVED IN SOFT DRINK PLANTS . . . NOW A MODEL EXPRESSLY DESIGNED FOR THE FOOD, DRUG AND CHEMICAL INDUSTRIES!

The Miller Hydro Co. pioneered the development of automatic equipment for the carbonated beverage industry. Now, whether you pack food, drug or chemical products in either glass, plastic, paper or metal containers you can get the benefit of Miller Hydro's vast experience in automatic packing. The Miller Hydro Packer is air operated and electrically controlled. Neither the labels or the containers in which your product go to market are ever scarred, scuffed or scratched. Double cushioning—first by air and then by soft rubber—prevent shock which might cause breakage or mar your product's quality. Men responsible for cost, quality and production are finding it packs best!

See the remarkable Miller Hydro Air-Matic Case Packer in action. See how it fits your needs.
We'll be in booth No. 314.

MILLER HYDRO

Bainbridge, Georgia, U.S.A.

MAIL ME IMMEDIATELY

Miller Hydro Co.,
Bainbridge, Ga.

Gentlemen: Please send illustrated brochure giving full details on the Miller Hydro Case Packer.

Name_____

Firm Name_____

Address_____

City_____ State_____

floor space scarce?

GO UP

with vertical drier for end loaded cases on JONES *case packers*

A new vertical drier by R. A. Jones & Co. occupies floor area of only four feet square. This makes it possible for bulk can handlers in the brewery and food industries to use the Jones CMP (Constant Motion Case Packer) even where floor space is severely limited.

The vertical drier shown here on a Jones CMP installed at The F. & M. Schaefer Brewing Co., seals end loaded cases while moving them upward. The cases can be discharged to the floor above, or a conveyor from the top of the drier can be arranged to take them back to the original floor level. Rates of 40 and more cases per minute can be achieved, maximum speed being dependent upon ceiling height.

If you need the productivity of a Jones automatic case packer, but feel you haven't sufficient floor space, check with us for information on how this new engineering achievement can help you. The vertical drier is another example of how it pays to bring your cartoning and case packing problems to Jones.

The F. & M. Schaefer Brewing Co., Albany and New York City, uses the new Jones vertical drier on each of two CMP case packers for sealing end loaded cases containing 24 12-oz. cans. Each machine is also adjustable to handle 12 12-oz. cans.

R. A. **JONES** & COMPANY, INC.

Cartoning Machines - Case Packers

P. O. Box 485, Cincinnati 1, Ohio

New York • Chicago • St. Louis • Dallas • Los Angeles
San Francisco • Seattle • Montreal • Mexico D.F.

ATTEND PMMI
Visit Jones booth 1015

Circle No. 290 on Card, Page 107

Co.,
the
of
end
ans.
to

END
MI
Jones
1015